THE OTB

THE OLD TIMER'S BULLETIN AUGUST 2000 VOL. 41 / #3

OFFICIAL JOURNAL OF THE ANTIQUE WIRELESS ASSOCIATION, INC.

Published for the collector, historian and old-time radio operator

Vladimir Zworykin and his "Iconoscope." Meet the man who inspired the invention! p.24

Courtesy of the David Sarnoff Research Center

ANNUAL CONFERENCE SEPT. 6-9 2000 SEE SPECIAL INSERT INSIDE

THE OLD TIMER'S BULLETIN

OFFICIAL JOURNAL, ANTIQUE WIRELESS ASSOCIATION, INC.
BRUCE L. KELLEY 1914-1997, FOUNDING EDITOR

WHOM TO CONTACT

Please write legibly. Enclosing an SASE speeds replies.

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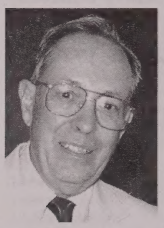
THE PRESIDENT'S MESSAGE

In approximately four weeks from the time you read this message, the annual AWA Convention of Members will take place in upstate New York at the Mariott Thruway in Henrietta, NY. For those who have never been there, Henrietta is a southern suburb of Rochester, easily accessible from the New York Thruway. The programs start early on Wednesday morning, and continue through mid-afternoon on Saturday. There will be ample opportunity to visit the museum, approximately 20 miles away, and the overall experience of programs, camaraderie, and sharing of experiences of this unique hobby (?) of early radio never ceases to enthrall those who attend.



However, I wish to make two points clear. First, the convention is being organized by, and functions on the backs of, a small corps of dedicated volunteers. They put in very long hours and they do this only once a year. If something does not go exactly as you feel it should, please bear with us. Constructive criticism—and help—is always welcome.

Second, please remember that this is a convention of members, and that is exactly how the permit is issued by the town of Henrietta. Our convention is not an old radio swapmeet/flea market for the general public. While it appears to some that the main reason for the gathering is the flea market, the convention team wishes to emphasize that this is simply one more program of the many that are offered for the members. The details are in the special colored section of this issue.

Last year the AWA board asked our Stan Avery, our Treasurer, who also happens to be a lieutenant in the Brighton, NY Police Department, to set up security to assure that all those attending our meet were actually members. This he and his team did, and very efficiently. A considerable furor ensued which seemed to come from a very small and highly vocal group, some of whom were members, some not. The AWA Board of Directors considered all the input, including that from a large number of members who told us to "leave everything as it is," and decided to do just that. So Stan and his team will be on duty again this year.

So please, if you are an AWA member, come and enjoy the meetings. If you are not, you are invited to join us. We hope to see you there.

—Bill Fizette, W2DGB

LETTERS TO THE EDITOR

All letters to the Editor are read with interest and attention, though not all can be published in this column. Letters may be paraphrased, shortened or otherwise edited to fit the available space. The statements made by our correspondents are their own opinions and do not necessarily reflect the views of either the OTB *staff or the Antique Wireless Association.*

MORE THOUGHTS ON GRID LEAK DETECTION

I found the recent article by Owens on grid leak detection (February *OTB*) thought-provoking and was especially impressed with the detailed measurements and the inclusion of real data that shed some light on this subject. My purpose in writing this letter is to present some additional thoughts I had and point out a few things I have found in old articles that clarify some of the material in Owen's article.

Owen's choice of zero level for electrode voltages was based on an arbitrary choice of the midpoint of the filament. He made it sound like it was the only possible choice, though his argument works just as well for any other point on the filament. A more-accepted convention in the RCA handbook for directly heated filament tubes is the use of A- as the reference.

When the plate voltage is 0 relative to A- , the plate current goes nearly to zero because the plate is not positive with respect to any part of the filament. This is not the case when the plate voltage is 0 relative to the mid-point of the filament because about half of the filament is still negative with respect to the plate.

Similarly, when the grid voltage is 0 relative to A- in vacuum tubes, the grid current is very small. There will be a small effect of emission velocity and contact potential between plate or grid and cathode that results in a small current

FROM THE EDITOR

I'd like to join President Fizette in encouraging all of you to make the annual pilgrimage to Rochester for our always exciting conference. Conference committee member Bob Schaumleffel has also asked me to mention that the Sightseeing Excursion, not held last year because of lack of support the previous year, is on again! Details of what should prove to be a fascinating boat trip (including passage through a lock) on the Erie Canal are in the special Conference insert bound into this issue. If you regretted the omission of the trip last year, help make it an ongoing tradition by attending this time.

As you know, this issue includes Lud Sibley's first as Editor of "The Vacuum Tube," though Lud is no stranger to our pages (see the "About Our Authors" section in this issue and last issue's "From the Editor)." Please join me in welcoming him! Lud's first column reviews the outstanding achievements of Brother Pat Dowd, his predecessor.

Other changes are afoot among our column editors. Roger Reinke leaves us as Key and Telegraph editor after the conclusion of John Casale's article on Franklin Pope in the next (November, 2000) issue. Taking over from Roger will be John Casale himself—who promises more in-depth articles on telegraph pioneers. I asked Roger for a farewell message, and I'll quote his e-mail in its entirety.

I'm pleased that John agreed to take over K&T, and I believe you (and whatever readers there may be) will be, too. I very much appreciate your help over the past few years ... can't remember how many, but too many. My primary motivation—beyond the conviction that a fresh viewpoint never hurts —is to do some in-depth research on early makers and instruments, something I couldn't really do even though the demands of column writing were not that bad. What might result from this is uncertain at this point, but if there's something worth sharing with OTB *readers I'll try to twist John's and your arms to publish it. Thanks again — RWR*

This is really a season for change among our columns because this issue contains Floyd Paul's final "The Loudspeaker". Just as did Roger Reinke, Floyd has selected a very knowledgeable and motivated person to take over—and that person has accepted. But I'll wait until the November issue—when plans for the new column are more complete—to do the introductions. Floyd has included his farewell note at the head of his column and I believe it is OK for me to add that he is leaving because of problems with his vision.

I note that our appeal for reader support for Ken Owens' "Restoration" column has borne fruit and Ken's column now appears for the first time since the November, 1999 issue. Frank Lotito's suggestion that someone tackle the problem of how to repair band/function switches and contribute the solution to Ken's column may or may not have resulted in any material for Ken—but the topic is covered in depth in an article by Daniel Schoo in the July issue of *Antique Radio Classified*. I recommend it highly—and thanks a lot, *ARC*!

LETTERS

even when the electrode voltages are 0 with respect to the A- side, and even with an indirectly heated cathode of uniform potential.

The choice of half way between A+ and A- may have the advantage that it represents the plate voltage as an average of the voltage between the plate and the two ends of the filament. This would be useful if tube data were tabulated with this convention. However, the RCA tube manual states that tube data for DC heated filament tubes are stated with voltages referenced to the A- side of the filament, and to midpoint of ac heated filament tubes.

The difference between choosing A- or the midpoint is probably only practically significant when considering grid bias since the plate voltage usually is large compared to the filament A supply. But for low plate voltages, there may be added reason to stick to the conventional reference at A-.

The statement that enhanced DC grid current in a 200-A tube is due to electrons neutralizing positive ion arrival at the grid seems questionable. This is the reverse direction of electron current flow for grid current. The enhanced current is more likely due to migration of positive ions to the filament where they reduce the space charge and thereby increase tube current.

No mention was made of the often-cited mechanism for superiority of the 200 type tube, namely triggering of ionization by signal to give an electron burst, as expounded in the May 96 *OTB*. I

have wondered about the validity of this explanation and wonder if someone else knows if there is anything to it and can offer some supporting data. One also should make a distinction between early 200 tubes, which contained Ar, rather than Cs as in the 200-A; The 200 type is a very different tube and the one used back when grid was first going to A-, at least in some of the sets.

Terman made the statement in 1929 that "the gas-filled 200-A super-sensitive detector is no more sensitive than would be a 201-A tube built with the same high mu (amplification). The gas apparently contributes substantially nothing in the 200-A tube but an objectionable hiss!" But as Owen points out, it does give more output because of the amplification.

The statement that the effect of grid leak value is "largely imaginary" may have some basis in comparing certain cases but is not to be taken as a general rule. The relative effects of leak value and capacitance value on fidelity/sensitivity are expounded in Terman's work. The early work of Terman in 1929, and in his 1932 book, indicated a lot about grid leak values way back then and was substantiated by a lot of measurements. The later editions of Terman dropped out a lot of the weak signal grid leak detection information.

I agree with another of Owens' points, but with one reservation. The statement was made that "Most manufacturers connected B- to A+ so they could return the RF amplifier grids to A- and get -2.5V bias for free." Granted one can connect the grid to the A- and get -2.5 volts bias relative to the filament midpoint, but this does not depend on connection of B- to A+. The -2.5 volt bias will exist between the grid and the midpoint of the filament regardless of where the B- is connected as long as the grid is connected to A-. The grid bias in this case is established by the A battery (neglecting the voltage drop in filament induced by the plate current, which is small).

I think this is an example of Owen's correct statement "The tube neither knows nor cares what happens outside. All it sees is the voltages on its elements relative to the cathode." However, it is often difficult to analyze how a tube operates without including the externally connected circuitry. You do get a little extra plate voltage by connecting B- to A+ compared to connection to A-.

There is a lot more that could be discussed about on some of these points, particularly on the effect of grid leak value/grid capacitance on sensitivity/tone fidelity and on the 200 vs. the 200-A but that is left for a future article.

DAN MERZ
Richland, WA

Ken Owens' article on grid leak detection has stimulated some astute comments—many of which have been printed in this "letters" column. Several of the closely-reasoned letters have been very long, and at this point your Editor must cry "Uncle!" Fascinating though it is, the topic has taken up an inordinate amount of room in what is, after all, a quarterly magazine with a limited page count. Dan graciously agreed to edit down the present letter from nine manuscript pages to less than two so we could include it here. But all future letters received on this subject, and any still in my files, will be sent to Ken Owens for his direct response.—MFE

RECEPTION REGULATION

In the May issue Donald Chester states in a letter that since the early days of radio, the U.S. government has regulated transmission of radio but (until a few years ago) not reception. However a letter reprinted on p. 50 of *Two Hundred Meters and Down* by Clinton DeSoto, the standard history of amateur radio (published 1936 by The American Radio Relay League), contradicts this.

The letter was sent from the Chief Radio Inspector of the Department of Commerce to all licensed amateurs in April, 1917.

Because of the entrance of the U.S. into World War One the letter directs the closing of all stations, for radio communications, *both transmitting and receiving* (my italics). In addition all amateurs were required to drop their antennas to the ground and disconnect their equipment from both antenna and ground. The directive remained in force until past the signing of the Armistice.

A. DAVID WUNSCH
Belmont, MA

THE GOOD OLD DAYS

This is in response to the article "The Long and Short of It" on long wave amateur operation (May issue).

When I was twelve years old in 1930, I used to lie on my back under my mother's Atwater Kent table radio and listen to W2GYH in Yonkers, New York on 160 meters, or 550 on the dial.

He chatted with other hams in the area about his transmitter and also played his guitar on the air (something that is now banned). As I remember, his transmitter was a home brew with 45's in the finals. His microphone was an old telephone mike.

Those were the days when the average amateur was not a millionaire, and built his rig from

scrounged and discarded materials. But as far as I can remember, W2GYH's audio quality was as good as the average telephone audio of the time.

That inspired my interest in radio. I never wanted to become an amateur, but I do think the amateurs of yesteryear had more fun building and using their rigs than today's operators of factory-built transistor rigs.

ALTON A. DUBOIS, JR.
Queensbury, N. Y.

DEBUT OF BRAZILIAN ANTIQUE RADIO EXPOSITION

The first Brazilian Antique Radio Exposition was held from April 28 to May 1, 2000 in São Roque, a small city located about 7 km from São Paulo. The exhibit was held in a circa 1890 building formerly used in textile manufacturing. Awards were presented for rarity, restoration and effectiveness of presentation. There was also a flea market. I participated with a display showing the evolution of the thermionic valve. Next year, the event will include lectures and film showings.

Entrance to Brazilian Antique Radio Exposition

CARLOS FAZANO
São Paulo, Brazil

GLASS CEILING AT 1930?

In an interesting chatty letter sent to AWA President Bill Fizette, Ray Larson (West Los Angeles, CA) wonders if *The OTB* has a "glass ceiling" at about the year 1930. He notes that we rarely run articles about radios with tube heaters rated at more than 2.5 volts. It seems that his personal favorites, early 6-volt tube sets, are rarely seen on our pages. If that's the case, Ray wonders what our publication's target audience really is.

As editor, I'm happy to say that we have no target audience except the readership in general. We print what our readers want to write about, and rarely reject anything that is well presented and well documented.

So Ray, if you want some 6-volt articles, please send them in. A typical feature article is 2000 words or so long, has a few photographs if appropriate (please, no digital camera files—we'd prefer to scan from conventional photos), and should be typed in good clear scannable type or sent in as a word processer file. We do have some volunteer members who will draft schematics from author's sketches if necessary.

The ball's in your court, Ray—OK?
MARC F. ELLIS
Editor, OTB

MORE COHERER LORE

From a letter to AWA President Bill Fizette:

I saw Dr. Crane's article on coherers in the May issue. I was surprised to note that he had to put such high voltages on his coherers. Mine work fine with just 1.5 volts. Dr. Crane and other readers might like to review parts 1, 2 and 3 of my article "The Coherer Detector" in *Electric Radio* magazine for June, July and August, 1996. Part 1 lists 27 references on coherers and similar early detectors.

BOB DENNISON, W2HBE
Westmont, NJ

TESLA ARTICLE SOURCES

In his letter in the May, 2000 issue of *The OTB*, Mike Twose states: "Mr. Bradford apparently does not consider Tesla himself a reliable source." Quite the contrary. Most of the information in my article about Tesla's wireless work came from Tesla via his published lectures, patent descriptions, photos, Colorado Springs Notes, and testimony to lawyers, and I gave references. It is true that Tesla talked about wireless transmission of industrial amounts of power through the earth as well as signals. I emphasized signals because they would have been the least demanding of the two, but the basic principles that I discussed apply to both.

My comment about only using reliable sources referred to the anecdote about Tesla receiving ten kilowatts of power twenty-six miles from his Colorado Springs transmitter by wireless means. This anecdote is important because, if true, it would be evidence —and the only strong evidence—that Tesla's system could transmit power or signals significant distances through the earth by electrical conduction. As Gary Gordon pointed out in his letter in the November 1999 *OTB*, this feat could not have been accomplished using long radio waves because

far too much transmitter power would be required (quite independent of the voltages used).

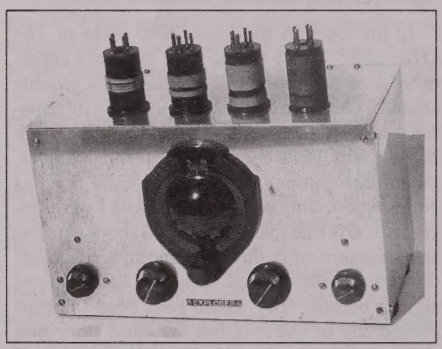
Unfortunately, the origins of this key piece of possible evidence are unclear. On page 193 of his book "Prodigal Genius," John J. O'Neill says that he deduced this story by piecing together the fragmentary material published in a number of publications, but he does not elaborate. As far as I know, Tesla never made this claim, and he was not shy about talking about his achievements. So once again I would encourage Mr. Twose or any other *OTB* readers who have information about the origins of this story to write to *The OTB*.

MENRY M. BRADFORD
Nova Scotia, Canada

INFO WANTED

Here's a picture of the "Explorer" short-wave receiver I acquired from another ham. I've never seen another one. It's battery-powered, two stages of audio follow the detector, and four plug-in coils cover the range 15 to 160 meters. I can't figure out why there is a dark band at the top of the panel.

A picture in an ad for "The New Explorer Short-Wave Plugless Power Converter" (November, 1931 *Radio News*, p. 54) shows an almost identical panel. However this set has an "automatic band selector" that coils and covers



George Hausske's "Explorer."

the same frequency range. It may be AC rather than battery powered.

Can anyone provide more info on this interesting receiver?

GEORGE E. HAUSSKE, W9OLE
1922 E. Indiana St.
Wheaton, IL 60187-5932

Readers who write to George directly are invited to send a copy to the Editor for publication in this column.

DASHBOARD DANGERS

In my item on conversion of an auto radio to 120 volts AC (November, 1999 "Equipment Restoration" column), I forgot to mention a few safety issues. Never wear a metallic watch band or ring while groping under a dashboard. A man I once worked for did and got a real burn from getting between 6 volts plus and a grounded point. Also exercise caution when working around lever-operated windshield wiper motors. Get one of these going with your hand in the way and you could lose a finger!

RAY LARSON
West Los angeles, CA

MORE ON HOWARD/SILVER/ HALLICRAFTERS

As a further followup to "The Howard /Silver/ Hallicrafters Time Line" (November 1998 *OTB*; Letters, May 1999 *OTB*):

Frank Bequaert of Rainy Day Books provided a seven-page publication of E.H. Scott dated July 18, 1933, answering a biased report from McMurdo Silver on the relative performance of Silver's *Masterpiece* and *Scott's Allwave DeLuxe*. In his text, Scott states that Silver started in business "some nine months ago" which would put it at mid-November 1932. This agrees with the date I had previously noted, of October 31, 1932, for the bankruptcy sale of Silver-Marshall, but I did not have a precise date for the McMurdo Silver Inc. startup.

Scott also states that Clough-Brengle was formed at the same time—Kendall Clough and Ralph Brengle had formerly been with Silver-Marshall—and occupied one floor at 1134 West Austin Ave. while Silver occupied the floor above. An old card given to me by Harry Poster states that Clough-Brengle has been formed to take over Silver-Marshall's service business after that company had ceased operations on October 8, 1932. These cards must have been mailed out shortly afterward to Silver-Marshall dealers, again corroborating the mid-November startup date.

Silver's original report, and this Scott reply, must have been the opening salvo in their ongoing feud. Small wonder that Scott was furious: Silver had stated that "not one of them (the witnesses) has any association in connection with any of the makers of the sets tested, nor any manufacturing connection whatsoever. The laboratory making the test likewise has no such connection." Given that Clough-Brengle was the

(continued on page 12)

AWA NEWS

***OTB* POLICY ON PROMOTING EVENTS:** The *OTB* is pleased to list the meets and meetings of any established antique radio organization, whether or not it is associated with the AWA. Do not send your information directly to the *OTB* Editor. Please send it to Joyce Peckham, Box E, Breesport, NY 14816. Closing date is six weeks prior to first day of month of issue.

Calendar of AWA Activities

August 12
Niagara Frontier Wireless Association Meet

September 6-9
AWA Annual Conference
Theme: Crosley
See special insert, this issue

October 28
CC-AWA Greensboro Swapfest

November 5
Membership Meeting followed by Semi-Annual Board Meeting

November 10-12
VRPS/AWA Convention 2000

Calendar of Meets

(AWA logo identifies AWA-sponsored events)

ARCI RADIOFEST XVIII

August 4-6

Presented by Antique Radio Club of Illinois at the Ramada Hotel, Elgin, IL. Huge flea market, old equipment contest, auctions, awards banquet & show, presentations, Motorola display. For more info contact ARCI, P.O. Box 1139, La-Grange Park, IL 60526 or E-mail us at: arci31280@aol.com

NIAGARA FRONTIER WIRELESS ASSOCIATION

August 12

Joint meet with the AWA and our largest of the year. At the Amherst Museum, Amherst, NY. From the NY State Thruway, take Exit 49 (Transit Rd.,Rt. 78) north nine miles. Left on Tonawonda Creek Rd. Proceed two miles to the museum. Flea Market 8 a.m. to noon. Museum exhibits open 11:30 (there's a full room of early radios and TVs). Auction of remaining items from the John Myers estate—and items brought in by attendees—begins about 11 a.m. Also donation auction. There will be a talk related to early radio at about 12:30. Contest: whatever you want to bring! Entry fee of $5.00 includes annual NFWA membership and museum admission. No additional fees to sell or for any other activity. For info, call Larry Babcock at (716) 741-3082 or Gary Parzy at (716) 668-2943.

IHRS ELKHART MEET

August 19

At the Hi-Dive Park Pavilion, 500 E. Beardsley. Swap meet, silent auction, carry-in dinner. For more info, contact Terry Garl at 219-679-4280.

VINTAGE TECHNOLOGY MEET (UK)

September 10

At the De Vere Hotel, Leisure Center and Golf Course, Blackpool, just by the park and zoo. a short drive from J.4 on the M55 along the A 583 and A 587. 9 a.m. to 4 p.m. 75 stalls. See the Blackpool Illuminations; greatest free show on earth! For more info contact Vintage Technology, Tel: 01253 300100; Fax: 01253 300020; E-mail: brain@ blackpool.net.

CC-AWA GREENSBORO SWAPFEST

October 28

At City Lake Park in Jamestown, NC. Off I-40 in Greensboro, take the High Point Road exit. Head west (toward High Point) 7.5 miles and the park is on your right. Be there by park opening at 7 a.m. because vendors begin to close their trunks around 10:30. Minimal setup fee—no charge for shopping. For more info contact Brad Jones at 336-547-1919 or BandTJones@aol.com.

AWA MEMBERSHIP AND BOARD MEETING

November 5

At Rochester Thruway Marriott. Take Thruway (I-90) Exit 46, then I-390 North to NY 253 West to NY 15 South. Membership meeting at 1 p.m. (open to any interested member) followed by Semiannual Board Meeting.

VRPS-AWA CONVENTION 2000

November 10-12

At the Holiday Inn-Dallas/Fort Worth South (Irving, TX). Use the complimentary shuttle from D/FW airport. Rooms are $69.00, single or double. Three auctions, technical talks, old equipment contest, awards banquet, inside flea market Sunday. For more information contact VRPS, P.O. Box 16345, Irving, TX 75016 or e-mail BILLHAR@FLASH.NET

Recurring Meetings

• **California Historical Radio Society**—For info on current meetings, call the CHRS hotline: (415) 821-9800.

• **CARS, the Cincinnati Antique Radio Society**—Meets on the third Wednesday of each month at ITT Technical Institute, 4750 Wesley Ave., Norwood (Cinti.) Ohio. For more information contact Greg Tierney, (513) 732-1844, or Bob Sands, (513) 858-1755.

• **Carolinas Chapter of the AWA**—Hosts four "mini-swap-meets" each year (in January, May, July and October) plus an annual conference, "Spring Meet in the Carolinas," on the 4th weekend in March. Executive committee meets approximately quarterly. For more info, visit the web site at CC-AWA.ORG or contact Ron Lawrence, KC4YOY, Chapter President, P.O. Box 3015, Matthews, NC 28106-3015; phone (704) 289-1166; e-mail kc4yoy@trellis.net

• **Central Ohio Antique Radio Assn.**—Meets at 7:30 p.m., third Wednesday of each month at Devry Institute of Technology, 1350 Alum Creek Rd., Columbus. (1-70 Exit 103B). Contact: Barry Gould (614) 777-8534.

• **Delaware Valley Historic Radio Club**—Meeting and auction begins 7:30 p.m. on the second Tuesday of each month. Location: Telford Community Center on Hamlin Ave. in Telford, PA. Annual dues: $15.00, which includes a subscription to the club's monthly newsletter *The Oscillator*. For more info contact Bill Overbeck at (610) 789-8199 or Dave Snellman at (215) 345-4248. Club mailing address: P.O. Box 847, Havertown, PA 19053.

• **Houston Vintage Radio Association**—Meets second Tuesday each month (except Jan. and Dec.) at Lai Lai Restaurant, Tides II Motel, Houston Medical Center, Main and Holcombe Sts., Houston, TX. Meetings include auction/program, 7-10 p.m. Assoc. publishes *Grid Leak* quarterly, monthly activity announcements. Membership $15/yr. Write: HVRA, P.O. Box 31276, Houston, TX 77231-1276, or call Richard Collins, (713) 778-0721.

• **Hudson Valley Antique Radio & Phono Society**—Meets third Thursday of month, 7 p.m. Meeting, swap meet, and membership info: Peter DeAngelo, President, HARPS, 25 Co. Rt. 51, Campbell Hall, NY 10916. (914) 496-5130.

• **London Vintage Radio Club**—This Ontario, Canada club meets in London on the last Saturday of January, March, May, June and November. Annual flea market held in Guelph, Ontario in September in conjunction with the Toronto club. Contact: Lloyd Swackhammer, VE3I1A, RR#2, Alma, Ontario, Canada. (519) 638-2827.

• **Mid-Atlantic Radio Club**—Meets monthly, usually the third Sunday of the month at the New Hope Seventh Day Adventist Church, Burtonsville, MD. Contacts: President, Ed Lyon, 11301 Woodland Way, Myersville, MD 21773-9133, (301) 293-1773, e-mail lyon@fred.net or Membership Chair, Paul Farmer, (703) 960-0650, e-mail: oldradiotime @hotmail.com. Website www.maarc.org

• **New Jersey Antique Radio Club**—Meets second Friday each month, 7:30 p.m. Holds three annual swap meets. Contact (send SASE) Phil Vourtsis, 13 Cornell Pl., Manalapan, NJ 07726, (732) 446-2427.

• **Northwest Vintage Radio Society**—Meets second Saturday of each month (except July and August), at or about 10 a.m., at Abemathy Grange Hall, 15745 S. Harley Ave., Oregon City, OR. Members display radios, exchange information. Guests welcome at all meetings and functions, except board meetings. For info, write the Society at P.O. Box 82379, Portland, Oregon 97282-0379.

• **Oklahoma Vintage Radio Collectors**—Meets second Saturday each month, Oklahoma Station Bar-B-Q, 4333 NW 50th St., Oklahoma City, OK. Visitors welcome. Dinner/socializing, 6 p.m.; meeting at 7 p.m. Membership, $12/yr., includes monthly *Broadcast News*. Info: SASE to OKVRC, P.O. Box 50625, Midwest City, OK 73140-5625, or call (405) 755-4139 or (405) 732-6070.

• **Ottawa Vintage Radio Club**—Meets monthly (except June and July) in Conference Room, *Ottawa Citizen*, 1101 Baxter Rd., Ottawa, Ontario. Contact: Tom Devey, 601-810 Edgeworth Ave., Ottawa, ON K2B 5L5, (613) 828-5152. Membership: $10 Canadian/yr.

• **Society for Preservation of Antique Radio Knowledge**—Meets at 7:30 p.m., fourth Tuesday of each month in the party room at Cassano's Pizza Parlor, 1700 East Stroop Rd., Kettering, OH. Membership, $12/year. Write SPARK, P.O. Box 292111, Kettering, OH 45429; e-mail sparkinc@juno.com or call Dan Gebhart (937) 299-9570.

• **Texas Antique Radio Club**—Meets alternate months in Kyle and Shertz, TZ. Contact: Ron Manning, President TARC, 133 East Huisache Ave., San antonio, TX 78212. Phone (210) 734-6831; e-mail ronmeg@gateway.net; website www.gvtc.com/~edengel/TARC.htm

With the Chapters

Mark your calendar now for Saturday October 28! The CC-AWA Greensboro Antique Radio swap-fest is shaping up to be another big event. The heat of summer will be over—the leaves will be turning—we'll be getting ready for Halloween... Ah, but the true collectors will be heading to Jamestown, North Carolina for a quiet stroll through City Lake Park, looking for radio treasures and catching up on old times with old friends.

For those who haven't attended, City Lake Park is located along Greensboro-High Point Road. Jamestown is the small town that connects the two, and the park is situated on a lake, so it's a nice setting that time of year. We're able to use a long parking lot as our vendor set up area. It's located next to a small gym. That's where the restrooms are, and in case of rain, it has a covered loading area so everyone can set up inside and out of the bad weather. If the sun is shining (and it always has been...) this is the perfect location for real easy-going "tailgating" like we all used to do years ago.

No big set-ups needed, just the stuff that's lying around or radios you're starting to get tired of. Remember heading to the Holiday Inn in Monroe? Before eBay, before the collection worked its way into every room in the house? Yep, those were the days. So toss a couple of radios in the car and be there early! The gate to the park opens at 7 AM ... and there's always a line waiting to get in at that point. Due to the small amount of manpower (usually one) there's no holding back on sales—so the early birds get the wireless worms!

The cost to set up is minimal, and there's never a charge if you're just shopping. Most people stay until at least 10:00 or 10:30, then the trunks start to close, the deals are finalized, phone numbers are exchanged, and folks head down the road. The last car usually pulls out by noon. It's a fairly short day, but we've all seen some great buys and some great radios change hands during the fall meet. Remember the catalin set for $5? I didn't get it, but another quick thinker did. Might be some more treasures ready to crawl out of another collector's garage. Take a moment and mark it down. For exact directions and contact information, see "Calendar of Meets" section for October 28. When you get there, we're in the parking lot behind the pool, which is visible from the road.—Ron Lawrence, KC4YOY, Chapter President

Service Sources Available

The AWA Source Sheet is a listing of parts suppliers and services for the radio collector. Cost: only a business-size self-addressed stamped envelope to AWA, Box E, Breesport, NY 14816.

AWA Slide/Video Program

The Antique Wireless Association has available several historical documentaries to loan to affiliated organizations for club meetings and programs. There is no charge for this service other than return mailing cost. For info on loan conditions, to make reservations, or just inquire, contact Richard Ransley, P.O. Box 41, Sodus, NY 14551. The following are available:

VHS VIDEO PROGRAMS

V-2 — "Electrons on Parade." 18 min. 1938 movie made at RCA's Harrison Plant showing production lines with closeups showing receiving tubes, including a short sequence on transmitting tubes. (Very rare movie.)

V-4 — "The British Receiver." Documentary of the AWA/BVPS meet with visit to Marconi's Chelmsford plant, the British Science Museum, and ending with series of collectible British receivers. (VHS program transferred from slides.)

V-5 — "The Early Years." Historical documentary narrated by Clarence Tuska telling of the early years of amateur radio, founding of the ARRL and WW I military radio training school. (VHS program transferred from slides.)

V-6 — "The Key." History of the telegraph/radio key covering early hand keys, semi-automatics and commercial types. Script by Lou

AWA NETS

PHONE:

SUNDAY:
7244 kHz, SSB, noon (NCS:WA4IAM);
3837 kHz, AM 4 p.m. (E.S.T.), 4:30 p.m. (during E.D.S.T.) (NCSs:W2ZM & W2AN)

TUESDAY:
14274 kHz SSB, 2:30 p.m. (NCSs KC3YE and W0FXY)
3837 kHz SSB, 8 p.m. (NCS WB2SYQ)

MONDAY-WEDNESDAY-FRIDAY:
3867 kHz, 9:30 a.m. (NCS: W2SHN)
CW:

DAILY, 4 p.m., 3588 or 7050 kHz. Protocol, informal. Check both frequencies for activity and join in, or call AWA de (your call) and see What you stir up. First **WEDNESDAY** of each month, 8 p.m., 7050 kHz

2-M REPEATER (Rochester Area)

MONDAY, 7:30 p.m. (NCS: K2G8R)
Receive 146.8 MHz
Transmit 146.220 MHz

Moreau, W3WRE. (VHS program transferred from slides.)

V-9 — "The Transatlantic Tests and 1BCG." Rare documentary/photographs showing early amateur operation leading to famous 1921 transatlantic tests.

V-12 — "Those Wonderful Magazine Covers." The story of radio through magazine covers. Colorful with period music.

V-15 — "The WHAM Story." Details development of a pioneer radio station in Rochester, NY. Program developed with assistance and recollections of Art Kelly, the station's former general manager.

V-16 — "The Charles Herrold Story." Video prepared by Mike Adams who donated this copy to the AWA. It documents the work of broadcasting's Forgotten Father who started broadcasting in 1912.

SLIDE PROGRAMS

S-1 — "Portrait of a Pioneer." The life of Elmo Pickerill.

S-2 — "Polar Adventure." Pictures taken by Bud Waite and his narration describing numerous trips to the Antarctic over a 35-year period.

S-3 — "70 Years of Vacuum Tubes." Describes the history of vacuum tubes.

S-4 — "The Early Years." (See description for V-5.)

S-7 — "The Transatlantic Tests and 1BCG." (See description for V-9.)

S-8 — "Trip Through the AWA Museum" Covers exhibits and equipment.

S-12 — "The Key." (See description for V-6.)

LETTERS, *continued from page 8*

testing laboratory, and was even producing the antennas sent out with every Silver set at that time, Silver's claims were patently false. The report of course had shown that the *Masterpiece* beat the pants off Scott's *Allwave DeLuxe*.

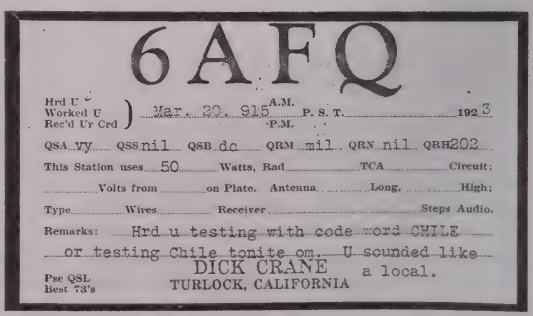
Incidentally, I found a photo of Silver's 2900 Michigan Ave. plant in the November 1936 issue of *Silver Times*. It is identified as the Splitdorf Building, a small four-story structure apparently of poured concrete. The site is now a parking lot.

ALAN DOUGLAS
Pocasset, MA

BLAST FROM THE PAST

I enjoyed Dick Crane's "Coherers Revisited" story in the May *OTB*, and thought you might like to see one of the Dick's early QSL (or in this case SWL) cards. I have the 9ZT/6AM QSL file, and when you run a story from the 20s I probably have a QSL from the author!

JAN PERKINS, N6AW
Brea, CA


6AFQ

Hrd U / Worked U / Rec'd Ur Crd) Mar. 20, 915 A.M. / P.M. P. S. T. 1923

QSA vy QSS nil QSB dc QRM mil QRN nil QRB 203

This Station uses 50 Watts, Rad. TCA Circuit:

Volts from on Plate. Antenna Long, High;

Type Wires Receiver Steps Audio.

Remarks: Hrd u testing with code word CHILE or testing Chile tonite om. U sounded like a local.

Pse QSL Best 73's

DICK CRANE
TURLOCK, CALIFORNIA

Dick Crane's 1923 QSL Card

BY LARRY BABCOCK

SON OF "MEET REPORT EXTRAVAGANZA!"

Last year at this time, we ran Larry Babcock's reports on three radio meets. This year, history repeats itself. As always, Larry had asked me to hold his report on the previous August's "Niagaradio" meet until the following August issue (this one), where it would be good PR for the upcoming meet. (Have I confused everybody, yet?). But in the meantime, the mail brought two more Babcock meet reports: "Spring Meet in the Carolinas," run by The Carolinas Chapter of AWA, and a local meet in Bradenton, FL.

I thought we had better publish all of them now before any more stories from this tireless meet reporter and attender pile up! Unfortunately, we just didn't have room for all of the interesting detail that Larry always includes in his reports—but I think we managed to get enough in to give you the essential flavor of each event.

If we can prevail on Larry to do one of his excellent Rochester Conference reports for us this fall, we promise him more space in the November issue! —MFE

Niagaradio '99

August 14, 1999

The Niagara Frontier Wireless Association held their annual antique radio meet at the Amherst museum near Buffalo, NY. Almost 200 people showed up and there was lots of action in the flea market. This was a joint meeting with the AWA and they were very helpful with their support.

The entrance fee was only $5 and included entry to the museum's exhibits, seller's fee and annual membership in the NFWA. A lot of collectors bring their spouses to this meet because the museum opens early for this event and visitors can view the many interesting exhibits.

The Amherst museum is a small town of historical buildings that have been moved to a rural site. The meet is held along the streets in a park-like atmosphere.

My wife, Dorothy, sets up and runs our flea market table and sales were good this year. There weren't a lot of dealers. Sellers were mostly collectors disposing of their surplus from card tables. I did notice that no one was buying transistor novelty radios. This seems to be a trend, and prices for novelty radios have dropped significantly.

NWFA meet is in a rural area far from freeways and noise. Man in wheelchair is Past President Don Holdaway.

For many the highlight of this event is the auction of artifacts from the John Myers estate. The NFWA has been disposing of these items for five years and it is nearing the end. There were no minimums and no restrictions, everything went, and there were lots of bargains. There was also a donation auction.

When you come to this event you need not get up in the middle of the night as with many other meets. The gates are unlocked at 8:00 AM; that is when

8095 CENTER LANE, EAST AMHERST, NY 14051

everyone enters and sets up their tables. Not at dawn as elsewhere! Hope you can make it next August.

Gearing up for the NWFA auction. Being in a wheelchair didn't stop Don Holden from serving as auctioneer.

Bradenton, FL Meet

March 18, 2000

While in wintering Florida my wife and I attended the radio meet in Bradenton, as we have for the past four years. It is a smaller, local meet but we have always enjoyed it. It was held at the Stewart Elementary School and to get there by the 7 am opening we had to arise before the sun and even before the truckers at our motel. Ours was the fifth car in the school parking lot!

Since Dot and I were in the middle of a five-week trip south from Buffalo, NY, we only had room to bring one box of items to sell. Sales were slower than in previous years but we still sold almost half of the items we brought. I find tubes are much desired here. We also sold a Philco cathedral, some radio neckties, a lot of early radio magazines and some paper.

I noticed that whereas in previous years all of the tables were filled with items for sale, this year only about 15 were used. Norm Smith, the meet organizer, thought that this was because the club was late in sending out the announcements this year. Perhaps, but I have noticed a reduction in the size of every meet I attended last year with the exception of the AWA fall meet in Rochester, NY. The smaller meets seem to be affected the most.

It's the Internet, most people think. (See the following writeup of "Spring Meet in the Carolinas". Personally I have only ever purchased one set via the Internet. I find it a lot more fun to mix with the other collectors and see all of the items offered.

I saw an early "RCA Institute" code practice set for sale but it had a modem buzzer. Since I had an old buzzer for sale on my table, I offered it to the seller. He suggested instead that I buy the code practice set and fix it up with my buzzer, which I did because I have started a collection of code practice sets. At $5 it was a good bargain I thought.

By about 10 am things were winding down. This is strictly a flea market. There is no contest or program but it is a lot of fun and I find the people to be very sociable. If you happen to be in the area as we also were, it will make a nice addition to your trip. Future meets will be held at the Stewart Elementary School in Bradenton, FL on 2 December 2000 and 17 March 2001. For details call Norm Smith at (941) 792-0003. Get a Bradenton street map or very specific instructions; the school is hard to find.

I am concerned about the smaller size of the meet this year. I would recommend sending the announcements out early to all who attended the last few years, and I would also suggest the opening time be moved back an hour to 8 am. A small auction might help too! Maybe toward the end of the flea market. How about that, Norm?

Overall view of the "Spring Meet in the Carolinas" flea market as it appeared from our fifth-floor hotel room window. About 140 sellers' spaces were occupied.

On the day prior to this meet we were driving along Rt. 41 near the Sarasota airport when we saw a sign, "POWEL CROSLEY MUSEUM". We followed the arrows and came to a beautiful old mansion just a bit north of the Ringling museum. A caretaker told me that this had been Crosley's winter home but that there was no museum as yet. The home is currently being used for

weddings and similar activities. There was an adjacent building which might ultimately be restored and used as a museum to display Crosley products. Check it out in a year or two!

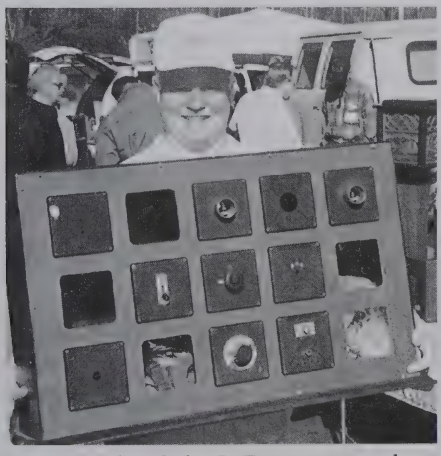
Spring Meet in the Carolinas

Hosted by Carolinas Chapter of the AWA
March 23 -25, 2000

This meet was held at the Sheraton Airport Plaza Hotel in Charlotte, NC. We found it to be even bigger and better than when we last attended in 1997. I was sorry not to arrive in time for the annual membership meeting but did make the evening talk on restoration and learned a lot of good techniques for rebuilding wood radio cabinets. There was also a discussion on modern methods for documenting your old radios.

The main event started Friday morning at precisely 8:00 a.m. with the outdoor antique radio flea market. No buyers are allowed entr into the parking lot before 8:00 a.m. There is no need to get up in the middle of the night and everyone has an equal chance at the objects for sale. At the opening bell all the buyers came into the parking lot in a flood at the same time as the sellers were starting to set up their tables. At first buyers were walking by tables that were almost empty, but by the time I got around to the last table just about everything was on display.

Ron Lawrence told me that this event grows 15-25% each year. Indeed the flea market did seem bigger than when I last attended in 1997. I counted about 170 spaces available in the parking lot and I would say they were about 80% filled. Most flea market dealers reported good sales. One told me he sold everything he brought except one item and he put that in the auction and went home empty!



Ernie Hite thought his DeForest interpanel was the buy of the "Spring Meet." Some of the missing panels and a lot of other parts are stuffed inside the cabinet.

My prize purchase at Charlotte was this unusual RCA BP-10 portable, complete with the 1939 New York World's Fair Trylon and Perisphere logo.

We all hear how sales of radio artifacts on the Internet have affected the size of radio meets and indeed many sellers did tell me that they sell a lot of their better stuff this way. One dealer explained that when he prices an item and puts it on his flea market table, buyers dicker and he must sell the object for a bit less than his asking price. On the Internet, however, there is competition between buyers and his item often sells at a price significantly higher than that listed.

I do think that perhaps there was less of the really good stuff in the flea market but nevertheless it does seem to be growing every year. I saw quite a few nice artifacts offered. My own prize purchase was a 1939 RCA BP-10 portable originally sold at the 1939 New York World's Fair.

The radio was mounted inside a base with the Trylon and Perisphere mounted on top! I just had to have that set because I attended the 1939 World's Fair and remember seeing the RCA exhibit where modern television was first introduced to the public. I knew that the BP-10 was also introduced at the fair. The first set using miniature tubes, it was a much smaller radio than the public had ever seen previously.

The most unusual item I saw sold in the flea market was a very early 15-panel DeForest set, which was purchased by Ernie Hite. He thought it was the buy of the meet. Even though there were numerous missing parts (some of which were stuffed in the cabinet), he is confident he can restore it. Ernie also got the original manual, which has excellent information on the complete set!

Buford Chidester was set up in the flea mar-

ket. He is a great person to get to know if you have problems with any early cone speaker. He makes excellent reproduction cones for just about any speaker. I have personally bought three from him to restore my Western Electric speakers with good results. Look for him at most meets in the northeast part of the country.

The auction was much larger this year than when I last attended in 1997. There were about double the number of lots offered for sale and about 170 bidders compared to about 130 three years ago. 103 lots were offered for sale and total sales were about $4,400.

At the Bradenton meet.My wife (center) enjoys setting up at these events as much as I do. That's Norm Smith, organizer of the meet, standing at right.

The auctioneer was a fun guy. He didn't let it bother him that he didn't know much about old radios and he had a knack for completing sales that would have been "NO SALE" anywhere else. When the bidding didn't reach the reserve price he would dicker between the buyer and seller until an agreement was reached. He was able to move over half of the "NO SALE" lots! This made it fun and it didn't matter that it slowed things down a little.

Some excellent displays were entered in the equipment contest. Ernie Hite showed his fine DeForest RA 10 with DA 2 Amplifier. Geoffrey Bourne showed a display of several 1928 Eveready items. There was a beautiful Burns mother of pearl model 205P horn entered by Gary Carter and a very rare large English Amplion wooden horn by Ed Bell. I also liked the Wurlitzer "barn" radio model C-6 entered by John Deloria.

The Sheraton is a fine place for this meet. It is fancy with glass walled elevators which allow you to look down into the five-story-high lobby and see the pool which extends both inside and outside the building. My wife, Dot, and I are looking forward to attending again next year on the return from our Florida trip. We hope that you will be able to attend also.

The "Carolinas Chapter" is the first regional antique radio club to become a chapter of the AWA. They are proud of this and make it known in their literature. I understand that other clubs are also interested in making this association.

Auction Results — Spring Meet in the Carolinas

PRICE	DESCRIPTION
NO SALE	ECHOHOME MUSIC BOX RADIO-WORKS
140	SKYLARK CATHEDRAL, RESTORED, WORKS, VGC
5	GE WOOD PAINTED TABLE MODEL, YELLOW/GREEN, WORKS
80	RCA WOOD TABLE MODEL, WOOD, PLAYS, REFINISHED, SHINY
NO SALE	AIR CHIEF WOOD TABLE MODEL, GC, WORKS, RECAPPED
105	SHURE #55 MICROPHONE, VGC
30	RCA PLASTIC TABLE MODEL, #9X571, LOOKS GOOD, WORKS
25	JOHNSON -MORRIS KEY, GC, CHROME
27	TOY MICROPHONE ,FC, SUSPENDED BY 8 SPRINGS
NO SALE	PHIICO WOOD TABLE MODEL, #37-611, "BUBBLE RADIO"
20	SEARS SILVERTONE, WLS CONE SPEAKER, ROUND METAL CASE
55	CROSLEY 1938 FARM RADIO & TUBE TESTER
45	MAJESTIC #71 WITH SM VENEER MISSING, BAD FILTER CAPS
75	MAGNAVOX M1 HORN SPKR, WORKS, REPAINTED GOLD, NEW DECAL

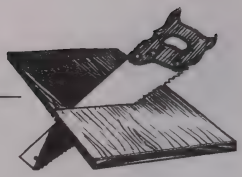
PRICE	DESCRIPTION
NO SALE	APEX RADIO & HORN, BOTH WORK,
40	SILVERTONE WD11 TUBE, BAKELITE, GOOD EMISSION
25	ZENITH PORTABLE, FLIP TOP DIAL, GC
37	ZENITH PORTABLE, BIG PLASTIC CASE, 2 DOORS
20	BOX OF MAYBE 12 XSTR RADIOS
25	STEWART WARNER 019A7? CONSOLE, OCTAL TUBES, BIG, GC,
50	8 RADIO BOYS BOOKS, FAIR
80	TRI CITY 1920s WOOD TABLE MODEL, LIKE CROSLEY 51
30	BOX XSTR RADIOS, HEADPHONES, MORE
25	AM BOSCH, FLOOR MODEL WITH LEGS, #48, LOOKS OK
15	RCA BLACK PLASTIC TABLE MODEL, BAD DIAL CORD
130	SCOTT #800B, TUNER, AMP & SPKR, NO CABINET, F/GC
20	EMERSON SM PLASTIC AC PORTABLE, TUBE ON LINE CORD?
40	PEERLESS GOTHIC SPEAKER & TABLE, WORKS
25	PHILCO ARMY SIGNAL CORPS RCVR, IN CANVAS BAG
17	CROSLEY #77 REPWOOD, LOOSE IN CABINET, NO KNOBS

PRICE	DESCRIPTION
170	MAGIC TONE BOTTLE RADIO, WORKS, GC, TUBE SET
NO SALE	PHILCO #48-360 PORTABLE, WOOD/LEATHER, LOOKS OK
NO SALE	RADIOLA 103 SPKR, PLAYS, TAPESTRY FIG, REAR SILK OK
170	AMERICAN CARBON BUTTON MIKE 8 SPRINGS,
85	PHILCO WOOD TABLE MODEL, LOOKS OK #57C?
70	TOM THUMB PORTABLE, GC WORKS
200	BEAUTIFUL DEFOREST CROSLEY METAL CONSOLE, GOLD TRIM,
	SWAN ON GRILL, SHOWY ,REFINISHED
75	ZENITH TRANSOCEANIC #G500, VGC, WORKS
80	STEWART WARNER TABLE MODEL, RECAPPED, EXC, WORKS
NO SALE	PHILCO #70 CATHEDRAL, RESTORED, WORKS, GC
NO SALE	PHILCO #71 CATHEDRAL, VGC, NEW CAPS & TUBES
60	KNIGHT WOOD TABLE RADIO, HUMS, GC, ELECT EYE
10	MAJESTIC BC-1023A AIRCRAFT RCVR, SHOCK MOUNTS, SMALL
15	BOX 3 TABLE MODELS,F/G, SOME CRACKED, SOME PLAY
50	THREE KNOB TRF HOME BREW, NO TUBES, OAK CABINET
300	BOX OF 60+ OIA'S, ALL TEST GOOD
NO SALE	ASTATIC MICROPHONE
5	LAFAYETTE MICROPHONE, GC
NO SALE	PHILCO #90 CATHEDRAL, RECAPPED, PLAYED GOOD AT HOME, NOT WORKING NOW, NS @ $312.50
45	AK #E SPEAKER, GC, WOOD STAND
25	EMERSON SM PLASTIC TABLE MODEL, GC, MISSING A KNOB
40	PHILCO #38-62 WOOD TABLE MODEL, LOOKS GOOD
53	GE CONSOLE, MULTIBAND, WOOD, LOOKS GOOD, NEWER TYPE
25	REGAL, SMALL BLACK PLASTIC TABLE MODEL, GC
NO SALE	STROMBERG CARLSON #641, F/G, KNOB MISSING
NO SALE	STROMBERG CARLSON CONSOLE, 1936, PLAYS GOOD, NICE
30	MOTOROLA GREEN PLASTIC TABLE MODEL, GC, PLAYS
17	RCA 1939 PORTABLE #BP-IO, VGC
NO SALE	PHILCO WOOD TABLE MODEL, SMALL, COMPLETELY RESORED
NO SALE	GE CATHEDRAL, UNTESTED, LOOKS F/G
50	2 TABLE MODEL RADIOS, 1 PLASTIC, 1 WOOD, 1 PLAYS
15	ASTATIC? UT30 MICROPHONE, GC
NO SALE	SYLVANIA SERVICE MAN'S BOX/TUBE CADDY
20	BOX 4 RADIOS, 3 PLAY
NO SALE	RADIOLA VII BATTERY SET, SOME PARTS WRONG, NO LID
65	RCA WOOD TOMBSTONE #653, GC
40	PHILCO WOOD TABLE MODEL, #49-506, GC, CUTE
50	PHILCO TV RADIO SERVICE SIGN, TIN, 24" x 30"
30	BOX 2 TRANSISTOR PORTABLES, BOTH WORK
10	ZENITH PLASTIC TABLE MODEL AM/FM, GC
110	RCA HAND-PAINTED ORIENTAL TABLE MODEL, GC, #75X17 NICE SET, WORKING CONDITION UNKNOWN
$75	RCA TOMBSTONE #RL61A, VGC
NO SALE	PHILCO #20 CATHEDRAL, EXCELLENT, WORKS GOOD (#110 BID, $175 ASKED)
50	1926 WOOD 1 KNOBBER, TABLE MODEL
10	AIRLINE FARM SET, CABINET ROUGH, CHASSIS UK
NO SALE	KENNEDY CATHEDRAL #53, NICE COND., WORKS
25	VEF? RUSSIAN SHORT WAVE RADIO, PLASTIC CASE, VGC
NO SALE	TWO FAIR RADIOS IN A BOX
185	SILVERTONE #6120, INGRAHAM WOOD CABINET, TABLE MODEL GOOD COND, PUSH BUTTONS
7	2 RADIOS NOT VERY OLD, ONE STEREO
30	3 PLASTIC TABLE MODELS, 2 LOOK GOOD
NO SALE	PHILCO #144B CATHEDRAL, NEW CAPS, RESTORED, NICE
10	PLASTIC TABLE MODEL
25	RED PAINTED RADIO WITH FM, VERY SMALL, OK
NO SALE	AIR CHIEF, WOOD SQUARE TABLE MODEL, PB, LOOKS OK
NO SALE	AIRLINE TEL-A-DIAL, WOOD TABLE MODEL, TUNING EYE
NO SALE	ZENITH #R520 PLASTIC CLOCK TABLE MODEL
60	RCA #103 WOOD TABLE MODEL, SMALL, GOOD COND.
NO SALE	ZENITH PLASTIC EARLY 50s TABLE MODEL
65	GE CATHEDRAL, WOOD, NICE, GOOD COND.
NO SALE	AIRLINE PLASTIC TABLE MODEL, DOES NOT PLAY, FAIR
130	APEX, NICE CLEAN BATTERY SET WITH SIX 01As
30	PHILCO SMALL WOOD TABLE MODEL, RECAPPED, SLIDE RULE DIAL, PLAYS
150	AK #54 TOMBSTONE TABLE MODEL, GC, ONE OF THE LAST AKS 95 AK #145, GOOD COND., MISSING DIAL GLASS
NO SALE	PHILCO CATHEDRAL WOOD TABLE MODEL, COMPLETE, GC ($75 BID, $150 ASKED)
125	LARGE TOMBSTONE W/O SPEAKER, LOOKS FAIR/GOOD
NO SALE	RCA R7A WOOD TOMBSTONE, WORKS
100	PHILCO #60B, COMPLETE, GOOD COND
30	WATSON ? TABLE MODEL, COMPLETE, UNTESTED
NO SALE	PHILCO CATHEDRAL #19, HUMS, MAKES STATIC, WORKS OK

$4,353- TOTAL AUCTION SALES (APPROXIMATE)
103 LOTS OFFERED IN 2 HOURS, 22 MINUTES.

BREADBOARDING

EDITED BY **RICHARD A. PARKS**, 2620 LAKE RIDGE CT., OAKTON, VA 22124
PLEASE INCLUDE SASE FOR REPLY.



Bring Historical Circuits to Life On Your Workbench!

A Screen-Grid Regenerative Detector

I promised last time to take one more look at a regenerative circuit, this time employing a screen-grid tube. That takes us a little beyond the chronological approach we've been following, but I'll go back to Reinartz, Ultraudion, and Neutrodyne circuits later. My source (1) tells me the screen grid tube was invented by Walter Schottky in Germany in 1915. It took ten years or so to find its way into commercial sets, and when it did, the era of the three-dialer triode-filled set ended. Here's what the screen grid does:

In a triode, the small capacitance between grid and plate limits its ability to amplify signals in high-gain circuits because the plate signal, out of phase with the grid signal, feeds back to the grid to a small extent and reduces the effective gain somewhat by cancellation. Moreover, at some critical high frequency the feedback may be great enough to cause unwanted oscillations. Shielding or screening the grid from the plate by interposing a second grid, grounded to r.f. signals, allowed the tube to achieve a larger gain by reducing the unwanted feedback.

When that was done, the capacitance from grid to plate dropped toward zero. Besides that, the screen grid can operate at a positive voltage sufficient to speed the electron flow toward the plate and also catch any electrons that might be bounced off the plate or knocked off gas ions in the interelectrode region. Schottky found that a practical screen grid tube could have huge gain. How come? I refer you to Ghirardi (2):

"As the screen grid is maintained at a positive potential with respect to the heater or filament, it thereby tends to neutralize and decrease the space charge between the filament and plate. This helps to increase the controlling effect of the control grid on the electron and plate current flow, that is, it increases the amplification factor of the tube. Thus, while the 3-electrode type 227 tube has a mu of 9, the 224 screen-grid tube has a mu of about 400..."

Well, we still have types 22, 24/24A, and 32 from which to choose these days. Let's take a look at a regenerative detector that uses a type 32 screen-grid tube. It turns out we can control the gain of the tube, and thus its regeneration action, by adjusting the screen voltage. I built up a con-

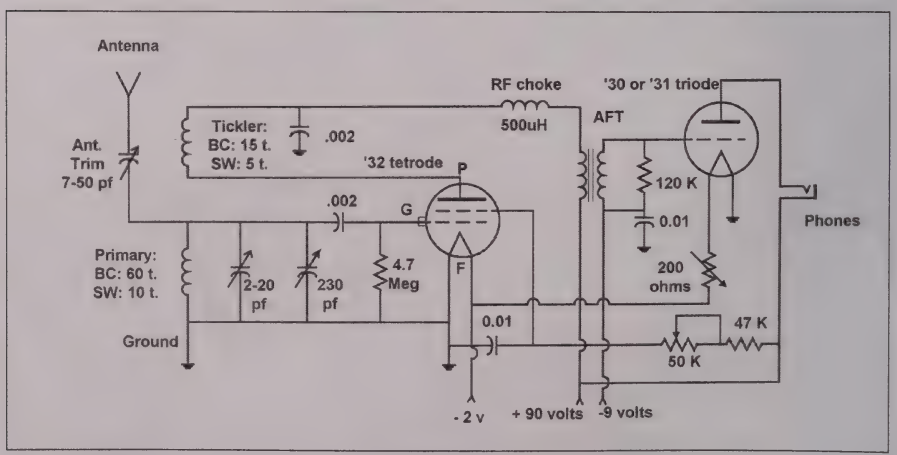


Fig. 1. Schematic of the screen-grid regenerative detector.

ventional circuit plus a one-stage triode amplifier as shown in Fig. 1.

The set needs 2 volts for the filaments, a negative nine volt "C" bias for the amplifier tube, and a B+ supply of 90 volts. Again I used the power supply from the Vol.40, No.4 issue of *OTB*.

I used a swiveling-link antenna coupling coil (at left in Fig. 2). There's also an antenna trimmer for comparison in tests. I wound coils for broadcast and for somewhere in the SW band.

At the lower left of the front panel is a filament rheostat for the '30 amplifier, and the big knob at the right is the regeneration control—a 50 K wirewound pot. I used a good interstage audio transformer from a derelict set, one with a 5 to 1 turns ratio. See Fig. 3 for parts placement details.

When I threw this circuit together, it worked well enough; the screen voltage controlled regeneration as advertised and I got the usual number of local stations. And it was a small improvement over the type 30 triode receiver described here in two previous columns.

Now, the beauty of breadboarding is that it gives us the ability to change parts around and mess with component values without worrying too much about the cosmetic appeal of the hardware. Though this piece is prettier than a breadboard needs to be, I tore into it and made some measurements to see how much gain was accruing through the signal path. Shorting out the tickler coil, I measured 7 millivolts of grid signal from a modulated r.f. generator, and only 2 mV of recovered modulation at the hot side of the a.f. transformer. That resulted in about 9 mV of grid signal and 25 mV at the plate of the '30 triode.

To see how the '32 would function as a straight audio amplifier, I put a 5 mV audio tone on its grid and measured about 50 mV at the plate into a load resistor of 220k ohms. Seemed reasonable to me, but a far cry from a gain of 400! I changed values of the bypass caps shown in the schematic without much effect, then tried putting a shunt resistor across the a.f.t. secondary. That vastly improved the quality of the recovered audio. Anything between 100k and a megohm worked fine there. Some versions of this circuit call for a high-value choke and a coupling capacitor in place of the a.f.t. That might give a little more audio gain.

(continued on page 22)

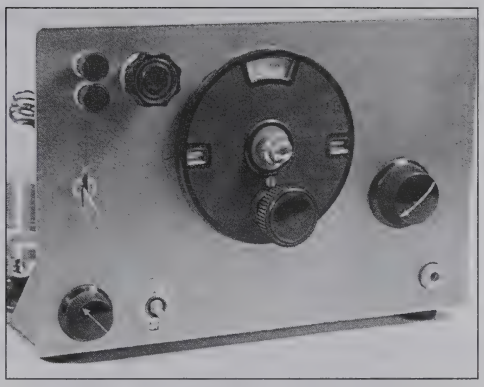


Fig. 2. Knob above and to left of tuning dial is antenna trimmer. Filament rheostat for '30 audio amplifier is at lower left. Regeneration control is at right of tuning dial.

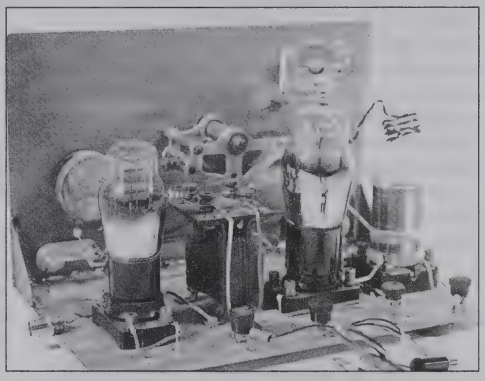


Fig. 3. Rear view shows parts layout. Audio transformer is between the two tubes; plug-in tuning coil at far right.

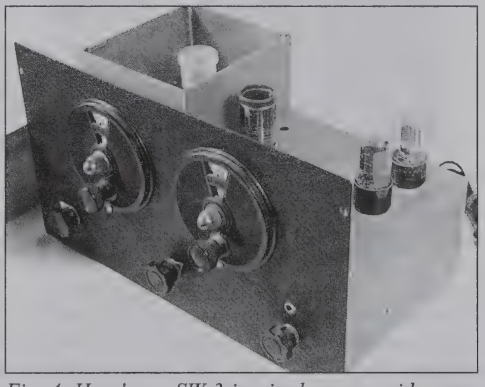


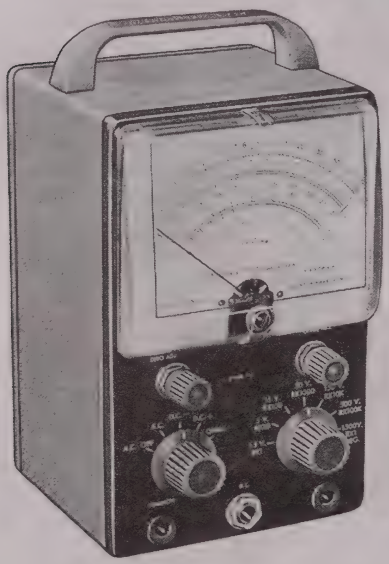
Fig. 4. Here's my SW-3-inspired screen-grid regenerative detector. Send me a S.A.S.E. if you'd like a schematic.

BY BILL FIZETTE, W2DGB

A Structured Approach to Fixing up Those Nice Old Radios

3 — Test Gear...The Vacuum Tube Voltmeter...The Capacitor Checker

In the last installment we discussed the desirability of having a suitable work area. After all, we are not trying to function under field conditions here, but presumably out of our home. This is not to say that suitable emergency work can't be done in situations such as at field day, but here we are trying to develop some skills that will require some concentration in desirable surroundings.If you have kept up with me so far, you now have a work area, well lit, with power outlets, and you know where you can get some parts.You have some simple tools. So let's go on to the next step, actually repairing some pieces of gear and putting them to work.



The Heathkit Model V-7A Vacuum Tube Voltmeter.

Vacuum Tube Voltmeter

The first item I bought for my electronics workbench some 50 years ago, on the advice of a ham/electrical engineer, was a vacuum tube voltmeter kit. The VTVM is the most used instrument on the radio workbench. I chose the Heathkit Model V-5 and it worked out very well. (In fact, I still have it.) Over the years I have continued with Heathkit VTVMs and other Heath test gear, mainly because I could pick them up at hamfests for a song, they are easily repaired, and they work well. The one I am using now is a Model IM-32, one of the later tube models, but they are all quite similar.

Let me say here that you can by-pass this step in the learning process, go to Radio Shack, buy one of the latest solid state digital meters, and start immediately to delve into the innards of an old radio. However, the skills and knowledge you pick up working with this VTVM exercise will be quite valuable, and the analog meter is sometimes to be preferred over a digital model. Besides, I am partial to old tube-type test gear.

Be somewhat cautious in your selection of a used VTVM to work on. One reason I have stayed with the older Heathkits is that they are easy to get and the manuals are very detailed. Pay particular attention to the meter, as it is the most critical part. When you tilt the instrument, the needle should move upscale a half inch or so, and then go right back to the zero point. While this is no guarantee that the meter is good, it is a start. Look at the case; if it is beat up and dented, forget it unless you can get the unit for a buck to use for parts. Try the switches; they should move easily and make satisfying clicks.

Be sure to get the meter probes. The wire can be replaced, but finding the probe parts can be a nuisance. (A Radio Shack store may be able to help you here.) Try to get the manual, but if it

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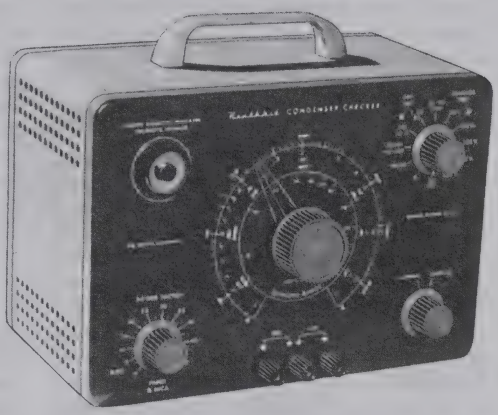
doesn't come with the meter, ask around and locate one. It will be hard to work without it.

OK. Now we have the operating room and the patient, along with the manual. (For purposes of this exercise I will be referring to the Heathkit Model V-7A.) First, clean up the outside. Then, remove the two screws from the back and put them in a jar or other safe place. Remove the innards from the case and look at it the assembly carefully. You will see two multiple section switches, a power transformer, two tubes, a battery, and a bunch of wires and small parts.

If the battery is absent and the contacts are clean, you are lucky. I have found VTVMs in which the battery was left inside for years, corroding the contacts and sometimes the surrounding area.—requiring additional repair work on my part.



The Heathkit Model C-3 Capacitor Checker.

Now, how do we fix our main piece of test gear without a test meter? Simple; borrow one that is good. (Remember your Elmer, the guy who will be there to get you started?) Besides the battery and meter situations mentioned above, you also hope that the power transformer is still good. Test the primary by running a resistance/continuity check on the line cord prongs. You should get about 100-150 ohms with the switch on. If the switch is flaky, spritz it with some contact cleaner and work it back and forth until the oxide is broken down. (I recommend that you use a non- lubricating type of cleaner. Ace Hardware sells one, and Antique Electronic Supply in Tempe, AZ also stocks cleaners.)

Look closely at the line cord. These usually need replacing. Try to use a cord with a wire size somewhat similar to the original, although if you wish to play it safe, the original 2-wire cord can be replaced with the 3-wire grounding type. Make a good overall inspection of the innards, and especially look for any signs of burning or arcing. If all is satisfactory, clean the switch contacts by spraying them with contact cleaner and working them back and forth for a few minutes.

Next, take a good look at the electrolytic filter capacitor. If the positive side shows signs of age, dimples, leakage, and so forth, replace it with a NEW 20 mFd or so unit having a working voltage anywhere from 150 to 400 volts.The only other tubular capacitor in the instrument is the 0.01 mFd/1600 volt isolation cap for the AC input line. This may or may not be bad, so use your judgement about replacing it. Put a new "C" cell battery in the holder.the minus side goes to ground.

Now it's time for the smoke test. Make up a test lamp assembly from a short extension cord and a lamp socket—wiring the socket in series with one of the cord's leads. Screw a 40-watt bulb into the socket. Plug the extension cord into a Variac if you have one, so you can bring up the line voltage slowly. Otherwise, plug it directly into a wall socket. Plug the VTVM into the cord. Turn the instrument on. If the bulb lights to full brilliance when full voltage is applied, your meter has a dead short, so unplug it immediately. If all is OK, the bulb will glow only dimly. Now make sure that both tubes and the pilot lamp light up.

The last major restoration job you have to do is to check all the resistors. Unplug the power cord (that means UNPLUG it!) and, using a good borrowed ohmmeter, methodically go through all the resistors and see if they agree with the diagram values. Those wired to the switches should be off by not more than 5%, and should preferably be within 2%. If they are too far off, replace them. And don't forget to clean up the test leads. If the wire is bad, replace it. Attach a note to the case describing your restoration and the date.

Finally, go through the calibration sequence detailed in the manual. If any of the settings give you erratic readings, repeat the cleaning of the switch contacts, and also clean the adjustment pots, spraying contact cleaner inside them and

working the controls back and forth. If the meter won't balance, it is possible that the 12AU7 tube is too old. New ones are easily found at hamfests or in the Elmer's junkbox.

Capacitor Checker

Next to the VTVM, I find that the busiest piece of test gear on my bench is the mundane capacitor checker. Again, I use Heath mainly because of the detailed manual and ready availability at hamfests, but there are several other manufacturers who make similar items. With this instrument you can check both electrolytic and the usual passive dielectric capacitors for proper value, breakdown voltage, and general behavior under test. Most units also have a scale for measuring resistor values. I use my checker for ALL capacitors in a radio that I am restoring to working condition, including new stock, with the exception of micas, which I leave alone on faith.

When buying a used checker, try to get a statement from the seller that it works. I find that the most common problem is a burned out power transformer, and the values are such that standard replacements won't work. (For example, most have a 50-volt winding in addition to the filament and high-voltage windings.) Next, the eye tube may be so worn and dim that it needs to be replaced, but these are available. Look for a unit that is not all dinged up, and make every effort to get the manual. You will need it both to repair the unit and to learn how to use it. The checker that I presently use is the Heath IT-11, vintage about 1970 or so, mainly because it showed up on a seller's table and it matched my IM-32.

For this exercise we will deal with the Heath C-3, vintage late 1950s, but they are all quite similar in circuitry. The exception is the "in-circuit" tester, such as the Heath CT-1. That type of instrument uses a different approach and is limited to testing for shorts and opens. The big advantage is that the capacitor can be tested in the circuit, without having to disconnect one side, as in the case with the C-3 and IT-11. However, experience shows that you will be replacing virtually all paper and electrolytic capacitors in an old radio, so the latter units are to be preferred.

Once you get your checker on the bench, open it up and run continuity tests on the power transformer. Assuming that is good, your restoration will consist mainly of replacing the eight capacitors, including two electrolytics. Check all the resistors and replace any that are out of spec. Clean the switch contacts, and power the unit up with your extension-cord-and lamp rig.

Look to see that the 1626 rectifier and the 1629 eye tubes light up. If everything is a "go" so far, you are in business. Attach a note to the case, as mentioned before, documenting your renovation. Make up some test leads. (I use a pair of color-coded clip leads 6" long, and if I need extensions I clip some longer leads to these.)

So where are we? You should now have a working VTVM (the key instrument for a radio bench), a capacitor checker, and experience in working on some electronic gear. Now you have to learn to use this equipment, and the manuals and other reference sources will tell you how. I have my VTVM and capacitor checker on a shelf at eye level in the center of the work area. Whenever the power to the radio bench is turned on, the VTVM comes on. I use it all the time.

Next, I will spend some time on other pieces of test gear. Be patient, we will get to an old radio yet!

BREADBOARDING, *continued from page 19*

If you're interested in making a regenerative receiver, this circuit is a good candidate; it performs smoothly and is forgiving of almost any kind of antenna you might put up. But do be careful which way you hook up the filament supply - keep those filaments negative with respect to ground!

Finally, Fig. 4 is a view of a set that is an updated version of a National SW-3 from the '30s. One of the several models of that set used a screen-grid regenerative detector like the one in this column. My set is AC-powered, and uses a 6SG7 r.f. amplifier, a 6SH7 regenerative detector, 6SJ7 audio, and a 6K6GT audio output tube. Rectifier is a 6X5GT. If you'd like a schematic, just ask—with an SASE, please!

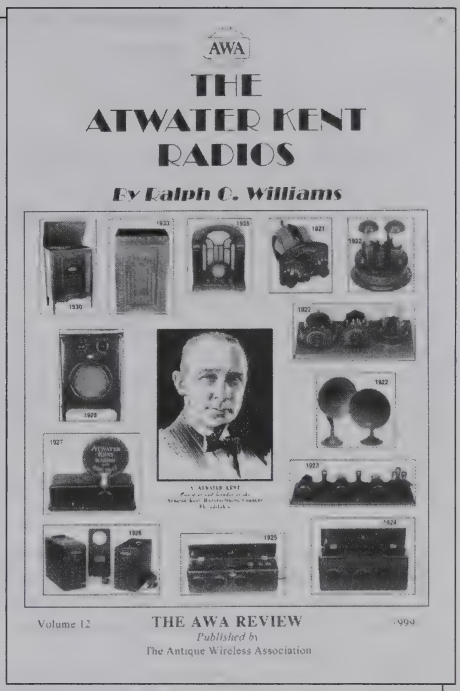
REFERENCES

(1) *Encyclopedia Britannica* website: www.britannica.com; Schottky biographical entry
(2) Ghirardi, Alfred, *Radio Physics Course*, Radio & Technical Publishing Co. New York, 1933, p. 459

AWA Review Volume 12 Now Available

The Atwater Kent Radios

By Ralph O. Williams



One of the giants of American industry, by any standard, was Arthur Atwater Kent, who, in the brief span of fourteen years, designed, manufactured, marketed and sold some five million radios. While Kent became exceedingly wealthy in the process, he in turn bequeathed to us a legacy of a myriad of unique, high quality products. These products of his energy and invention are the topic of *The AWA Review*, Volume 12.

The author, Ralph Williams of Orient, NY, has spent a large part of his adult life studying Atwater Kent, his methods, and his radios, and is widely recognized as the world expert on the subject. Since his retirement, he has founded a private museum, one of the most complete in the world, devoted to the man and his radios. The results of this dedication have also appeared through the years in various writings, including a series in *The AWA Review*, Volumes 1, 2, 3, and 10 in 1996. Other journals, such as *Radio Age*, have also published his material, which has proven to be very popular. Unfortunately, with the possible exception of the 1996 material, these publications are all now out of print and must be obtained through private sources.

The sheer quantity of material in Volume 12 of *The AWA Review* has necessitated a much larger publication than usual. To assemble the details and present them in a coherent and progressive manner has been a monumental job on the part of the author, and the book has been several years in preparation.

This book is *not* simply a reprint of prior writings, but is a complete new work, covering the entire range from the first of the radio laboratory instruments to the later superhets. Details not previously printed are included. The book boasts over 100 pictures. Our author has also commented on the changing face of the radio art and the socioeconomic climate of the 1920s and 1930s, which provided the challenges so important to the success of Atwater Kent. This background of the era is valuable to any student of the time and collector of the artifacts, and is not necessarily limited to those interested in Atwater Kent. There are three appendices, including a section on refinishing and restoring breadboards, an index of all models, and a separate insert detailing the radios and their characteristics.

The beginning collector will find here a wealth of subject material to work with. The more experienced collector will find information that can help clear the confusion regarding details of the various sets as they were developed. This book is also presented to help focus attention on this remarkable man and his contributions, and perhaps stimulate all collectors to new efforts.

The AWA Review, Volume 12, 1999. "The Atwater Kent Radios," by Ralph O. Williams. Size: 6 by 9 inches; 320 pages, soft cover; illustrated. Price: $29.95 postpaid in the US and Canada; $35.00 US funds elsewhere. Order from Edward M. Gable, 187 Lighthouse Road, Hilton, NY, 14468.

BY JAMES P. RYBAK, Ph.D., W0KSD

BORIS ROZING: ELECTRONIC TELEVISION VISIONARY

With all the fuss that has been made over just who did "invent" television, one of the earliest pioneers in this field, Boris Rozing, is rarely mentioned, In this article, Jim Rybak provides an informative look at this forgotten television genius whose work paved the way for electronic television.—Richard Brewster, Editor, OTB *Television column.*

Efforts to devise electrical systems which could transmit images of both fixed and moving objects between distant points predate Heinrich Hertz's work with electromagnetic waves by many years. If it is possible to send messages by wire, people reasoned, it surely should be possible to send images as well.

The key event which stimulated these efforts occurred when Willoughby Smith reported in 1873 that exposing a bar of selenium to light resulted in a change in the selenium's resistance. The amount of resistance change was found to be proportional to the intensity of the light. Countless technical difficulties, however, would delay the successful application of this principle to the transmission of images.

Boris Rozing

Shortly after Willoughby Smith's discovery, various individuals developed optimistic proposals to use selenium to convert images into electrical signals. Virtually all the early proposals employed an array of tiny selenium elements which were insulated from one another. Several different methods were suggested for converting the electrical signals from the transmitting array back into an image at the distant receiving location. A complete summary of these early proposals for transmitting images over long distances is included in Albert Abramson's excellent book on the history of television [1].

One major drawback with the methods of image transmission initially considered was that a separate wire had to be connected from each selenium element of the transmitting array to the corresponding element of the image producing array at the receiving location. Consequently, increasing both the horizontal and vertical resolution of the image by a given factor required the number of individual wires to increase by the square of that factor. Another drawback was the fact that selenium does not respond instantaneously to changes in the light intensity. Clearly, a better approach was needed.

Soon, the concept of "scanning" the image to be transmitted was proposed. Scanning consists of sequentially converting portions or "elements" of the image into electrical signals and then transmitting the signals in proper order using only one pair of wires.

Maurice LeBlanc proposed the first scanning technique. LeBlanc's scanning method was based on the use of a pair of mirrors vibrating in a carefully controlled manner. As the mirrors vibrated, light from only a very small portion of the image to be transmitted was reflected at a given instant. The beam of light from the image being scanned was then directed to a light-sensitive cell. The cell produced an electrical current that was directly proportional to the intensity of the reflected light. Others soon proposed similar scanning techniques [1].

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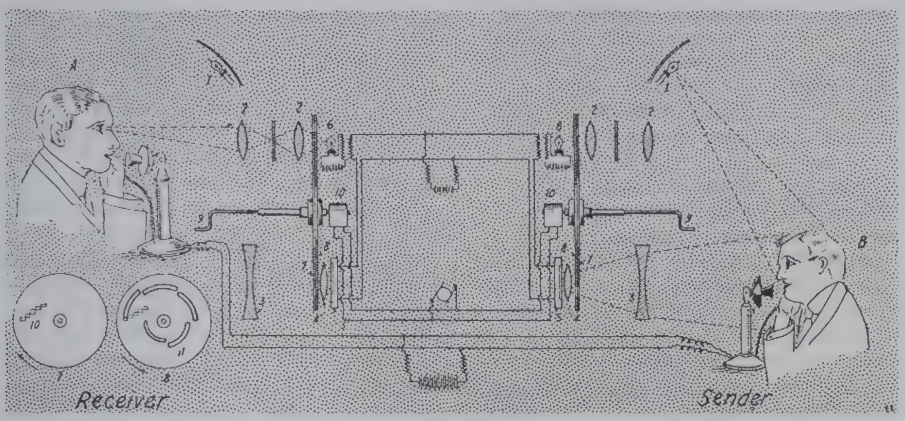


"Telephot" system proposed by Gustav Hoglund of Chicago reflects Nipkow's ideas. Image of sender (at right) is focused by lens system (interrupted by scanning disks) onto flat selenium cell. The resulting electrical variations in the cell modulate a lamp at the receiving end (at left)—which is interrupted by another set of scanning disks and viewed through a second lens system. Crank handles were for adjustments to keep disks in synchronization. From "Electrical Experimenter" [ref. 9].

Paul Nipkow in Germany, however, proposed the most significant early scanning technique in 1884. Although Nipkow obtained a patent on his proposal for a television system, he never built a working model. The scanning system Nipkow proposed employed a rotating disk with 24 small holes arranged in a spiral located near the outer edge of the disk. Each of the rotating holes sequentially defined a separate portion or element of the image to be transmitted. The light beam passing through the hole in the disk aligned with the image element at a particular instant was focused with lenses onto a selenium cell.

Nipkow's proposal called for a similar, synchronized rotating disk to be used at the receiver in conjunction with a polarized light source. The electrical signal from the transmitter controlled the plane of polarization of a Faraday-effect cell through which the polarized light at the receiver passed. This arrangement effectively modulated the intensity of the light at the receiver in proportion to the intensity of the light from the portion of the image that was being scanned at that instant by the transmitter disk [1,2].

Scanning, while substantially reducing the number of wires connecting the transmitter and receiver, introduced new problems. Fast scanning rates are desirable for best image quality of moving objects. However, the faster the scanning process occurred, the less time the light from a particular picture element acted on the photosensitive selenium.

This, together with the slow response time of the selenium, resulted in a smaller change in the electrical signal produced. Electronic amplifiers to boost weak signals did not exist at that time. These constraints limited the maximum rate at which scanning could occur in the early systems. Scanning also required more complex electrical circuitry and mechanical devices at both the transmitter and receiver.

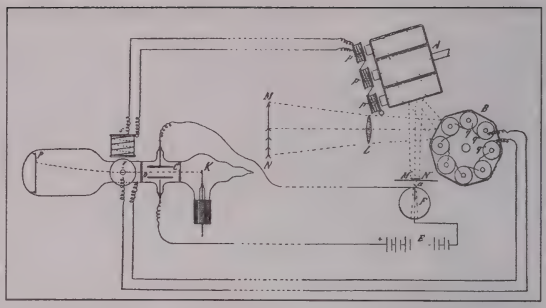
The very nature of mechanically scanned television resulted in constraints that would limit its future even after amplifying vacuum tubes were developed. In addition to requiring greater rotational speeds, achieving greater image quality also required larger Nipkow disks with more holes. This increased the physical sizes of both the transmitter and receiver in addition to making synchronization of the two rotating discs more difficult.

Initially, the image produced at the Nipkow disk receiver could be viewed only by one person at a time through a telescope eyepiece. An elaborate projection system of magnifying lenses and mirrors later was used to enable several persons to view the image simultaneously. Unfortunately, the more the image was magnified, the more its brightness and sharpness were diminished.

Boris Rozing (sometimes spelled "Rosing") was a pioneer in recognizing the limitations of

mechanical television and in working to develop a better, all-electronic system of television. Born in 1869 in Petersburg (now "St. Petersburg"), Russia, Rozing completed the physics program at Petersburg University in 1893. He then became a faculty member at the Petersburg Technical Institute where he soon began his research on transmitting images over long distances with "electrical telescopes" as he then called his antecedent system of today's television.

After several years of experimentation with various electro-mechanical systems for transmitting images, Rozing came to an important conclusion. He realized that his goal must be "the elimination, insofar as possible, of all inertial mechanisms from the electrical telescopes and replacing them by inertialess devices to the full extent of the significance of this word" [3, 4].



Rozing's 1907 "electrical telescope" eliminated scanning disks and motors. Two sets of rotating mirrors ("A" and "B") produced a zigzag scan of the image ("M-N") that was focused on fast-acting photocell ("F"). Impulses from the photocell controlled the intensity of the CRT's electron beam while scan pulses were picked up by mirror-mounted magnets passing over stationary coils. The scan pulses were transferred to magnets mounted on the CRT neck—sweeping the electron beam across the face of the tube. From "Scientific American" [ref. 10].

Rozing made a formal report of his work to that time to the International Congress of Electrotechnique held at Paris in 1900. His presentation was entitled "The Present Position of the Problem of Television." This may have been the first use of the word "television" [5].

Boris Rozing was very familiar with the cathode ray tube (CRT) invented in 1897 by Karl Ferdinand Braun. Rozing had used this tube in his earlier research on magnetic phenomena. The electron beam in a CRT is essentially inertialess and responds virtually instantaneously to electric and/or magnetic fields.

It is not surprising, therefore, that Rozing soon realized that the Braun tube (as the CRT was then known) would provide a superior means for viewing received images. He also had an idea for a photoelectric cell at the transmitter which, unlike selenium, would respond extremely rapidly to changes in light intensity.

At the end of ten years following his first investigations, Rozing had developed an image transmission and reception system that incorporated these "inertialess" features. He applied for British, German, and Russian patents in 1907 and, subsequently, these patents were awarded to him. British and German patents were important because scientists in these countries also were attempting to develop image transmission systems. British and German patents likely would establish his claim to priority better than would a Russian patent alone.

The scanning device in Rozing's "electric eye" (as he now sometimes called his system) consisted of two rotating octahedral drums with mirrors on their surfaces. The rotational axes of these drums were perpendicular to each other. The first drum on which light from the image fell rotated on a horizontal axis at a rate of 50 revolutions per second and caused scanning in the vertical direction. The light then was reflected from that drum to the second drum which rotated on a vertical axis at a rate of 12 revolutions per second and produced scanning in the horizontal direction. The combined rotations of the two mirrors produced a zigzag scanning of the image [5, 6, 7].

The light reflected from the second rotating drum was directed to the improved photoelectric cell that Rozing had designed. That cell consisted of a small glass sphere containing hydrogen or helium at a low pressure. The lower hemisphere of the glass cell was coated with an amalgam of chemicals that included cesium, sodium, or potassium. This coating formed the cathode of the cell and was connected to the negative terminal of a battery.

A platinum wire anode was fused through the top part of Rozing's photoelectric cell. A wire from this platinum electrode, together with a wire from the positive terminal of the battery, went to the CRT at the receiving station [8, 9].

The photoelectric cell was in total darkness when no light was reflected from the scanning mirrors. Under these conditions, no current flowed through the cell. When light from the scanner did strike the amalgam which formed the cathode of the cell, a current flowed which

was directly proportional to the intensity of that light [7, 10].

The current produced by Rozing's photosensitive cell varied the intensity of the light produced on the face of the CRT at the receiving station. This was accomplished through the use of a non-conducting disk with a hole in its center together with a pair of parallel metal plates that formed a capacitor. Both were located in the neck of the CRT. To reach the phosphor screen of the CRT, the electron beam had to flow through the hole in the disk.

Electric charge accumulated on the plates of the capacitor in the CRT neck as a result of the current generated by Rozing's photosensitive cell. The charge, in turn, produced an electric field between the capacitor plates which deflected the electron beam and controlled the number of electrons that passed through the hole.

As a result, the intensity of the light produced by the electron beam striking the CRT screen at the receiver was directly proportional to the intensity of the light falling on the photosensitive cell at the transmitter. Later, Rozing controlled the intensity of the light produced at the receiver by applying a video voltage directly to the cathode of the CRT.

In the early versions of his system, Rozing attached potentiometers with sliding contacts on the rotating drums of the scanner. As the drums revolved, sawtooth horizontal and vertical deflection voltages were produced which were used to control the motion of the electron beam across the CRT screen. Later, Rozing added the combination of rotating magnets and stationary coils to the scanner (as shown in the accompanying figure) to produce the deflection voltages. Only six wires were needed to connect Rozing's image transmitting apparatus with his receiving equipment [5, 6, 7, 9].

Although Rozing had applied for patents on his "electric telescope" in 1907, it was not until May 9, 1911 that he actually succeeded in transmitting an image of "four luminous bands." Soon afterward, he repeated this demonstration to four noted Petersburg physicists [3].

World War I caused Rozing to pursue research directly related to national defense. The Russian Revolution then further delayed for several more years his return to working on image transmission systems.

The 25th anniversary of the beginning of Rozing's image transmission work was celebrated with considerable fanfare in the Soviet Union in 1922. Two years later, Rozing was given the use of the best experimental physics laboratory in Leningrad (formerly Petersburg) and his progress continued. The images he now transmitted were composed of 2400 picture elements (today called "pixels"). The horizontal and vertical deflection voltages in this improved system were generated at the receiver using resistors and capacitors in a manner similar to how they are generated to this day [5].

Unfortunately, even Rozing's outstanding technical achievements could not insulate him from the political realities of the day. In 1931, Rozing was falsely accused and convicted of engaging in anti-Soviet activities. He was exiled to the far northern city of Archangel where he died of a cerebral hemorrhage two years later [5,11].

Rozing's legacy is not only that of being a pioneer in the development of electronic television. First and foremost, he was a teacher. It is well known that one can never predict the influence that a teacher will have on his students' future lives. One of the students with whom Rozing came into contact was Vladimir Zworykin. The year was 1910 and the place was the Institute of Technology at Petersburg. Zworykin was a third year student at the Institute. After observing Zworykin's conscientious and highly capable work style in another laboratory, Rozing invited him to work in his (Rozing's) own laboratory. It was here that Zworykin first learned of Rozing's image transmission work 11, 12].

Years later, after he had immigrated to the U.S., Zworykin developed the "Kinescope" electronic television receiver tube and the "Iconoscope" television camera tube while working for Westinghouse and RCA. These, together with the numerous other developments for which Zworykin is credited, made U.S. electronic television possible. As an indication of the significance of his achievements, RCA made Zworykin an honorary vice president of the Corporation upon his retirement from active scientific work in 1954.

In 1961, Zworykin described being invited to work in Rozing's laboratory as "My most exciting moment." Zworykin went on to say "Through the door which he (Rozing) opened at that moment of invitation, I stepped with him into a new and challenging field, following a path that led ultimately to the iconoscope and to the birth of modern electronic television." [12].

Perhaps Rozing's greatest contribution to the development of electronic television was the inspiration he provided to Vladimir Zworykin.

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(continued on page 34)

FRANK J. LOTITO, K3DZ

A 1920s Crystal-Controlled MOPA Xmtr

How about constructing a 1927-style 80-meter MOPA transmitter which clearly demonstrates the superior ability of a crystal to control frequency, even in a vintage-design? This project consumes no hard to obtain parts, is quite forgiving of the mechanical layout, and uses tubes having little or no demand in today's world (two common dual triode compactrons).

Probably the most expensive aspect of this transmitter is acquiring a selection of crystals covering your favorite 80 meter CW frequencies. But that should not deter you. After all, in days past most "rock-bound" amateurs did very nicely with one or two crystals, or if they were rich enough, three or four!

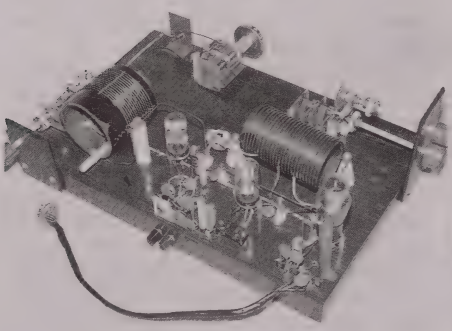
You may find the most difficult part to find is the compactron socket. However, this rig can also use any number of low-mu triode 9-pin miniature or octal tubes, as well as vintage tubes if you desire.

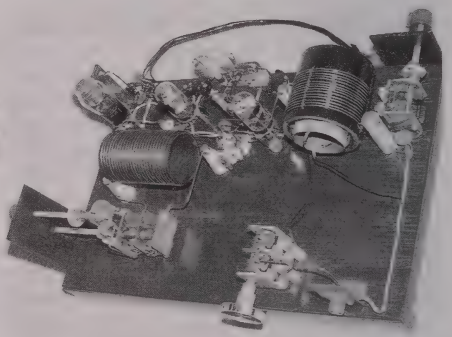
The transmitter is based on the designs presented in the 1927 ARRL *Radio Amateur's Handbook* (pp. 106-107) [1]. The original author built a frequency-doubling rig requiring no neutralization at the crystal's fundamental frequency can be realized if the PA was neutralized. This transmitter design complies with the AWA '29 QSO Party requirement for 10 watt max DC input. The 80 meter output at about 10 watts DC input to the PA is around 4.5 watts.

As a side note, if you have the 1915-1929 *QST* set on CD, a wild card search *crystal* for the period <1930 yields 64 hits. Of the 64, only 5 do not appear to be related to frequency control! There is no doubt that, CW crystal controlled transmitters were well within the vocabulary of amateurs prior to 1930! During this period amateurs were even using crystal control for 10 and 5 meter transmitters!

My transmitter is constructed using common mixed vintage junk box parts that mimic the unshielded wood baseboard designs of the early years of radio. The baseboard is 12" by 18", but size is not critical. A 3/16-inch tinned copper braid acts as the ground bus (see the photos). There are a few "minor" departures from the original '27 handbook design:

1. the use of low-mu compactron triodes in lieu





Two views of the completed transmitter. The FT-243 crystal is not installed in its socket—which is located on the power-cord edge of the breadboard next to the vertically mounted r.f. choke.

tralization. However he did indicate that opera-

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of the tubes common to the mid to late 1920s
2. the use of zener diodes for the oscillator tube and PA grid bias in lieu of using batteries, or special power supplies
3. the liberal use of bypass capacitors (helps to minimize some causes of instability and RFI).
4. a regulated (0D3/VR150) plate supply for the oscillator instead of the more common power resistor-voltage divider method. Some period designs did foster the use of a separate lower voltage-low impedance power supply to improve the quality of the oscillator's note (minimize chirp). A few of the more advanced designs of the 20s used the UX874, a 90-volt VR tube [2,4] similar to the late 1930/early 1940s octal base VR90/0B3 [5].
5. the use of parasitic suppressor resistors in the oscillator plate and PA plate and grid circuits to make sure parasitic oscillations [1, p. 87] are not present.
6. series feed in lieu of parallel feed (both series and parallel feed were used in the 20s).
7. keying both the oscillator and PA stages instead of just the PA stage (minimizes backwave).

An interesting aspect of this design is the use of fixed grid bias for both the oscillator and PA. In the early 20s fixed bias was more common than grid leak bias or the combination of fixed and grid leak bias. This 1927 handbook design uses fixed bias for both tubes.

The compactron chosen is the duodecar (12-pin) 6FM7. This is a dual triode tube primarily used as a vertical sweep oscillator and vertical output tube during the "last gasp" of vacuum-tube TV sets. There is a high-mu one watt dissipation triode and a low-mu 10 watt plate dissipation triode. Only the 10 watt triode is used in this transmitter. The unused high-mu triode's elements are electrically tied to the low-mu triode's cathode at the tube socket. The specifics for the low-mu half of this compactron dual triode in comparison to some of the common period tubes are:

	6FM7 [3]	UX210 [4]	205D [4]	UV203 [4]
mu	5.5	7.6	7	15
transconductance	6000	1500	2000	3000
filament volts	6.3	7.5	4.4	10
plate dissipation/ output rating	10	7.5	5	5

Other inexpensive, easy to find low-mu triodes can be used, i.e. the 6GF7 (novar [9-pin] compactron), 6DR7 (9-pin miniature), 6EM7 (octal), and the 6CK4 (octal). Don't forget the "odd" voltage variants of these tubes, i.e. the 13FM7. These variants' filaments are easy to power with the plethora of small power supply transformers found in today's surplus market.

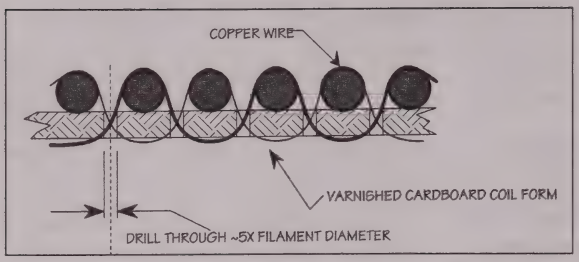
Chose a transformer with a slightly higher than required secondary voltage, and a secondary VA rating greater than that required to run filaments of the two tubes. Install an appropriate fixed resistor in series with the transformer's primary circuit. The resistor will lower the primary voltage such that the secondary provides the desired filament voltage for that tube nobody wants.

Caution, this technique may cause problems if the secondary voltage has to be reduced from too large a value. After setup, should one tube be removed from its socket, or if its filament fails, the remaining tube's filament may be subjected to an excessive voltage. It may burn out before the problem is discovered.

Experimentation is required to establish the oscillator tube's fixed grid bias and the tap points on the oscillator's plate inductance. My rig uses about 29 volts for most of my 80 M crystals. Start by using the approximation that tube cutoff grid bias is plate voltage divided by mu. For this design it is 155/5.5, or 28.2 VDC.

As a starting point I made up a stack of zeners totaling 24 volts. At this value, the oscillator tube's key down cathode current seemed too high (30-45 mA) for most of my FT-243 type 80 meter crystals with the oscillator plate tuned for best keying response and startup tone. As expected, oscillator current was also dependent on where the grid of the PA and neutralizing capacitor were tapped on the oscillator plate coil and the "activity" of specific crystal being used.

Adding an additional 4.7 volt zener (ECG5069A) to the grid bias allowed the oscillator key down cathode current to settle in around 25 mA when the oscillator tuning capacitor was adjusted for best startup response and tone. This voltage (-29 VDC) was satisfactory for most of my 80 meter crystals. Others seemed to key best with



Method of spacing and securing turns on the cardboard forms used for the PA and link coils.

a -24 volt zener stack.

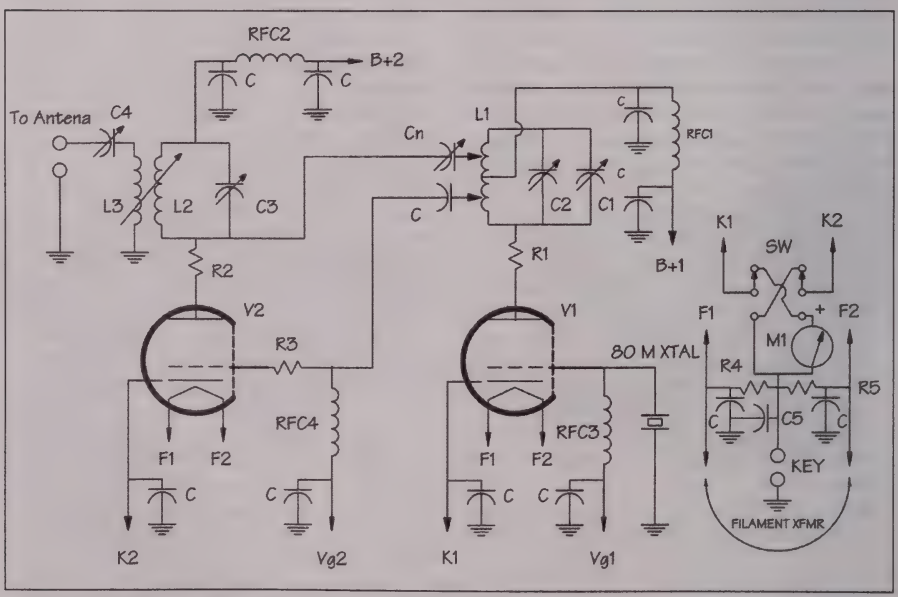
My zener "C-supply battery eliminators" use a key up zener current a little over 5 mA. The 5mA seems to be sufficient to keep the zener-regulated grid bias voltage constant at key down, although a few more mA for the zener bias current won't hurt.

The *Handbook* authors did recognize that "C" batteries could be eliminated if a resistor were to be placed in the power supply's ground return lead—applying cathode bias. However they did not follow through with examples.

I was able, easily, to eliminate the oscillator's fixed grid bias by returning the low side of the oscillator's grid choke directly to ground and installing a 1300-ohm 2-watt resistor at pin #7 (tube's cathode) of the oscillator tube socket. If you choose this approach, make sure there is a 0.01 mFd capacitor having decent r.f. performance from the cathode pin of the oscillator tube socket to ground. The capacitor is required to minimize the degeneration caused by the resistor. Most definitely, cathode bias or grid-leak bias is somewhat self-regulating if the tube is oscillating.

Part of the bias appearing on both tubes is due to the 100-ohm, 2-watt carbon resistor built into my external home-brewed key interface device. The input of this device can be one of my electronic keyers, a keyboard keyer, and/or a mechanical key at an auxiliary input. The is connected to the OT transmitter's cathode (or low side of the cathode mA meter if a meter is used). The primary purpose of the resistor is to limit the fault current in the keying transistor should a keyed tube flash over.

A secondary purpose is to "swamp" out the resistance of the mechanical keys, and keyer/mechanical key connector. (Changes in this resistance are a source of dynamic instability for simple LC one-tube-oscillator transmitters.) For my transmitter, the 100-ohm resistor presents another 5.5 volts bias to both tubes. You may have to consider this point if your keying device has a different resistance. Minor grid bias voltage changes may then be necessary.



Schematic of the crystal-controlled MOPA rig. Power supplies not shown. See parts list for parts values.

Additionally, my interface has 90 volts worth of zeners across its output. Thus "key up" cathode voltage to ground is limited to about +90 VDC.

Key-up DC operating voltage specifics are:

	Oscillator	Power amp
Plate	155	380
Grid	-29 to ground	-60 to ground
Cathode	35	35

Key-down DC operating specifics for about 4½ watts RF output on 80 meters are:

	Oscillator	Power amp
Plate volts	155	330
Grid volts	-29	-60
Grid current @ -29 volts	6 mA	150 uA
Cathode volts	5.8	5.8
Cathode current	25 mA	30 mA

The oscillator and PA plate tuning inductances and the output link are home made coils. I chose an oscillator and PA plate coil design based on a 400-ohm unloaded inductive reactance at 3500 kHz. The oscillator inductor is wound on a form that was probably intended for use as a loading inductance for a HF mobile whip.

This form is phenolic and is grooved 6 TPI (turns per inch). The PA inductor and output link are each wound on a length of varnished cardboard mailing tube. Due to the stiffness of the PA wire, the PA coil was first pre-wound on a smaller diameter rigid form. Notice the lacing scheme used to space the turns on both the PA and link coils.

There is nothing sacred about my coil construction. The builder has many options to construct the three coils and the means used to vary the coupling between the PA and link coils if variable link coupling is desired. (To minimize harmonic feed to the antenna system, locate the link coil L3 at the RF cold side of L2.) Specifics for my coils are:

	Oscillator	Power amp	Output Link
Coil form OD inches	2.50	3.31	2.31
Wire size AWG	#12	#14	#18 Enameled
Total no. of turns	24	16	5
Winding pitch TPI	6	8	5

Important points to keep in mind are the tube's maximum rated cathode-to-filament and grid-to-cathode voltages. The RCA RC-30 tube manual lists the maximum permitted cathode to filament voltage at ±100 volts for the 6FM7's low-mu triode. Note the schematic: the tubes' filaments float and the filament center tap is tied to the tube's cathode. This amply addresses the max filament to cathode voltage concern. (This rating does not apply if you use a direct heated cathode tube such as a type #45.)

In this transmitter it is almost 95 volts for the PA at key up (-60 volts fixed PA grid bias, and with a VTVM the cathode voltage was measured at approximately +35 volts). So far, all seems well, probably because the tube was intended to be used on pulse type sweep circuits.

The last, and definitely most important, point is operator and bystander safety. There is a fair amount of exposed metal carrying B+ voltage, as well as high RF voltages at key down. Most definitely by modern standards this transmitter presents an unacceptable electrical shock hazard. (This is true for all unguarded breadboard type OT transmitters, series or parallel feed.) If the visual effect of an "open breadboard transmitter" is desired it would be wise to construct a well vented insulating shield around the transmitter using a material such as clear Plexiglas.

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Construction Notes

1. The ground bus is a length of 3/16 tinned braid, see photos.
2. Pins 9, 10 & 11 of V1 and V2 are tied at the tube socket to the low-mu triode's cathode, pin 7.
4. Not shown on the schematic is a small SPDT toggle switch at the RF cold side of

(continued on page 34)

BELOW 535

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The Cape Breton Stations Of the Marconi Transatlantic Radio Service—Part 1

All photos courtesy The Marconi Company, Ltd.

Henry Bradford is a student of the historical aspects of radio transmission in Nova Scotia, Canada, where Marconi established a station for his first commercial transatlantic service. No discussion of activity below the AM Broadcast Band can ignore where it all started many years ago. Our columns for this and the following issue will be devoted Henry's brief conversational visit to Marconi's Nova Scotia site. It goes without saying that the original LF stations for the transatlantic radio service were monster structures. I am sure you will enjoy the unique photographs of the Marconi installation included by our author.—FJL

Introduction

The first regular commercial transatlantic wireless telegraph service began in October 1907 between Cape Breton, Nova Scotia, Canada, and Clifden, Ireland. The stations used spark transmitters and crystal detector or Fleming valve (diode detector) receivers until about World War 1 (1914-18). During that War, triode amplifier tubes (valves) were gradually introduced. The innovations found their way into the Marconi stations on both sides of the Atlantic. This article will describe the pre-WW1 transmitting facilities at the Cape Breton station. The receiving equipment will be covered in a future article.

The Original Hertz Transmitters

The first spark radio transmitters were built by Heinrich Hertz of Germany in the 1880s. Their purpose was to study the properties of radio waves. These very early transmitters included a battery power supply, a high voltage induction coil (transformer) with a buzzer-type interrupter in the transformer's primary circuit, a spark gap connected across the secondary, and an UHF dipole antenna connected across the spark gap. The transmitted frequency was around 400 MHz. In the mid-1890s Marconi and others developed apparatus for wireless communications for use over long distances. Their transmitters were based on the Hertz transmitters with the following significant design departures:

1. Generator power supplies for more power.
2. Transformer coupling, rather than direct coupling, between the spark circuit and the an-

Fig. 1. Marconi Towers station near Glace Bay, Nova Scotia, circa 1910.

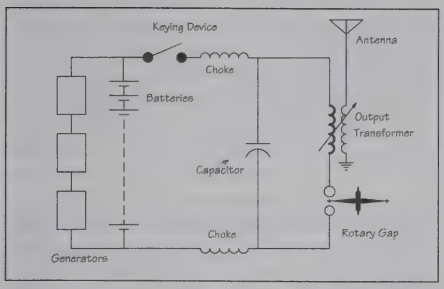

Fig. 2. Basic Spark Transmitter Circuit.

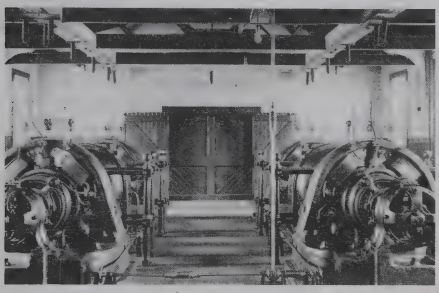

Fig. 3. DC generators at Marconi Towers, circa 1910.

tenna for improved transmitter tuning.

3. Gradual lowering of the operating frequency to the LF and VLF bands in an attempt to increase range.

4. Large antennas consisting of aerial arrays and a ground connection or ground screen. Initially, the lowering of the operating frequency was the result of using larger antennas in the quest for greater ranges using the assumption that "bigger is better." As time went on, the lower attenuation of the ground wave at longer wavelengths was noted. (The increase in wavelength towards the VLF band did have a problem: physically large antennas. The early generation of LF and VLF antennas was a construction disaster. The life expectancy of the wood lattice and pole antennas was at best a few years.—FJL)

The Early Marconi Transatlantic Stations

In December, 1901, using primitive portable receiving equipment, Marconi received a transatlantic test signal at St. John's, Newfoundland from his station at Cornwall, England. In 1902, he had to rebuild the station at Glace Bay on Cape Breton Island, Nova Scotia. The St. John's station had been only a receiving station.

In December 1902, Marconi transmitted the first transatlantic wireless telegraph messages from Glace Bay to Cornwall, England. The transmitter frequency was intended to be around 150 kHz. However, the transmitter's broad tuning and the use of poorly calibrated measuring instruments made the determination of the actual frequency doubtful.

These first stations proved to be inadequate for a reliable transatlantic service. In 1905 a second set of stations was built. One was just south of Glace Bay (Figure 1). The local people referred to this station as "Marconi Towers." The other station was built at Clifden, Ireland. In 1907, Marconi opened a regular commercial transatlantic wireless telegraph service between these stations.

The Transmitter Power Supply

Figure 2 shows a simplified schematic for the basic spark transmitters used at Marconi Towers and Clifden around 1910. The circuit was simple, but the components were huge due to the low frequency, the need to use of easy to obtain local materials, and the need for high transmitted power.

The power supply consisted of three 5-kilovolt DC generators in series (Figure 3). Connected in parallel was a standby battery. The battery con-

Fig. 4. The suspended batteries at Marconi Towers, circa 1910.

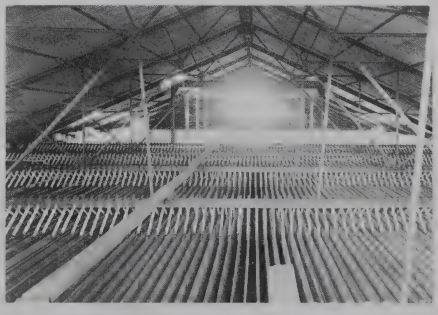

Fig. 5. Looking down at the "condenser" plates, condenser building, Marconi Towers, circa 1910.

sisted of 6,000 two-volt, 40 ampere-hour cells in series. If the generators broke down, the battery could provide about 500 kilowatt-hours at 12 kV. Each battery cell was built in a porcelain container. The batteries were suspended from steel rafters by porcelain insulators. The battery supply filled a very large room (Figure 4).

The power supply charged a capacitor made from 288 sixty foot by twenty foot wide metal sheets separated about 6 inches from each other (Figure 5). The sheets were suspended from rafters at the top of the building and hung vertically down almost to ground level. This capacitor (or "condenser," to use the original terminology) occupied most of the 160 foot long transmitter building. Thus, the building became known as the condenser building.

This great array of plates provided only 1.7 microfarads with a voltage rating of 15 kilovolts. An "air insulated" design was chosen rather than a more compact glass dielectric design because it was relatively-trouble free and easy to construct from locally available materials. If a draft caused the plates to move and short out, the "spot welded" plates were simply knocked apart.

Part 2 (conclusion) of this article will appear in the November, 2000 OTB.

BORIS ROZING, *continued from page 27*

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MOPA XMTR, *continued from page 31*

RFC2. The switch allows one to conveniently disconnect B+2 and DC ground V2's plate when the PA is neutralized.

5. Typical tap points on L1 (see schematic) are:
   Cn (neutralizing capacitor), 7 turns up from the CT
   C, 5 turns down from the CT

PARTS LIST

ITEM	DESCRIPTION
C	0.01 mFd, 600 V ceramic
C1	25 pF variable
C2	200 pF variable
C3	200 pF variable
C4	dual-section variable, 1000 pF total
C5	0.47 mFd, 200 V paper
Cn	25 pF variable
R1,2,4,5	47 Ω, 1/2 watt carbon
R3	100 Ω, 1/4 1/2 carbon
RFC1, 2	100 uH choke
RFC3, 4	2½ mH, 4-pie-section choke
L1	see table, design reactance 400 Ω
L2	see table, design reactance 400 Ω
L3	see table
M1	50- or 100-mA DC meter movement
SW	DPDT toggle switch
XTAL	FT-243 80 meter fundamental crystal
V1	6FM7, low-mu half*
V2	6FM7, low-mu half*
Vg1	-28 VDC*
Vg2	-60 VDC*
B+1	+155 VDC, reasonably regulated*
B+2	+340 VDC*
XFMR	6.3 VAC, at least 2½ amps*

*see text

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Advance registration is encouraged. This will allow you to receive your conference packet with a minimum of delay, with preassignment of flea market spaces. Preregistration, using the enclosed card, can be made through Richard Ransley, Box 41, Sodus, NY 14551 before Aug. 25. Unlimited registration at the door.

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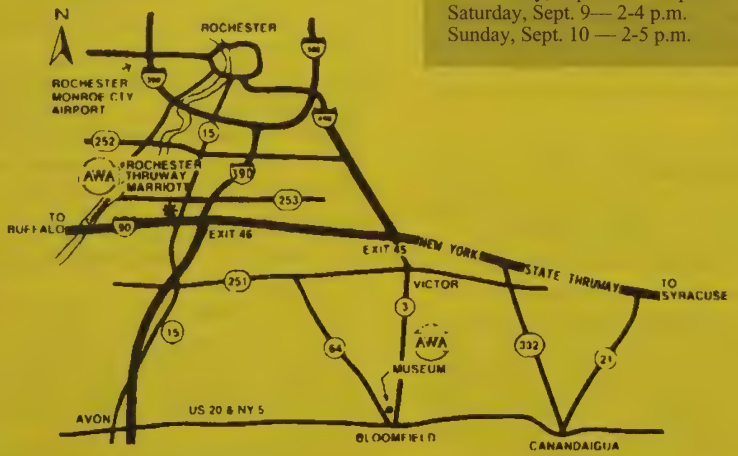

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6 p.m.—7 p.m. **Parking in flea market** for registered vendors

WEDNESDAY (9-6-00)

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6:50 a.m.—**Sunrise**

8 a.m.-5 p.m.—**Registration** for Conference—Assembly Corridor

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11:00 a.m.-noon—**AWA Members' Forum**. Be ready with questions, discussion topics, suggestions, regarding the operation/mission of our club. Conducted by AWA President Bill Fizette—Seneca Onondaga Rooms.

1 p.m.—**Hallicrafters- A History of The Company and the Ascent of the BC-610**, *Robert Grinder, K7AK*—Seneca-Onondaga Rooms.

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7 p.m.-**Crosley Historical and Top Awards Banquet**.

13. 1920s Regenerative and Reflexed Receivers
Manufacturers tried a variety of other circuits to improve the receiving capabilities of their radios—the regen and reflex among them. Bring in a fine example of a radio using one of these circuits.

14. Cathedrals and Tombstones
These are probably the most recognized vintage cabinet styles today. Just about everyone remembers such a set that was once in their home, a friend's or a relative's. So bring in that Philco 90 or Zenette or any other cathedral or tombstone style radio.

15. Novelty Radios
Entries here can range from a teddy bear transistor set to a lamp radio. There are many different styles and variations. Some fine examples would be an Empress Chalet radio, Melody Cruiser ship radio. Bring in any radio made to look like something else.

15. Speakers
A. HORN. Any sound reproduction device can be entered here as long as it employs a horn or bell for sound amplification.
B. CONE. When radio sets obtained greater power output levels, the magnetic speaker unit was designed with large surface areas for better sound reproduction. There are many fine examples of this type of speaker, i.e. Tower Adventurer, Western Electric,...

17. Test Equipment
This is a relatively new category for the contest. Many people have asked for it. There were many makers of test gear. A short list would include Supreme, Superior, Hickok, Weston, Read-Rite, General Radio, Simpson, Rider, RCA, And too many others to list. So surprise us, bring in the unusual or the common.

THE TRANSMITTER CATEGORIES

18. Spark Transmitters and Artifacts
Do not hesitate to enter a major piece of spark equipment if you think it is rare or historically significant.

19. Vacuum Tube Transmitters
Some of the sets for this class are old, some not so old, most home-built. While the predominant entries have been amateur-operated, commercial equipment is welcome.

THE CRAFTSMAN CATEGORIES

20. Restoration of Appearance
The purpose of this category is to display examples of rebuilding and refinishing the cabinets and containers that were used to house radio receivers. There is no requirement for a particular kind or size of set to be entered. A description of the work done will be considered an important part of the entry. The critical element is the appearance of the radio, including woodwork, escutcheons, dials, knobs and other visual details.

21. Restoration of Operation
This is the category for those craftsmen who artfully substitute modern components for old failures. The new electrolytic in the old can is an excellent example. Another is the transistorized tube. Perhaps the replacement of pot-metal parts by silver-gray-colored epoxy castings has been accomplished by one of us. If so, please bring in the set that incorporates that restoration. An entry should be accompanied by documentation showing the basis of the update that preserves the quality of the original.

22. New or Rebuilt
Previously we have encouraged entries that showed the conference attendees how substitutions and reconstructions would provide vital parts or pieces. We also encouraged craftsmen who had made an old function come alive again to bring their work for review. Do you remember the Federal receiver that was entered several years ago and the operating Marconi coherer detector from a little more recent contest? We want to continue that tradition, so bring in your retrospective designs and your reconstructions. There is no requirement for particular devices or circuits.

23. Tubes
In this category you can display a single tube or a collection. There should be a common theme with the display, such as historical significance, technological breakthrough, etc. The display should tell a story.

THE CONTEST AWARDS

In addition to the prizes ranking winners in each contest category, there are five special prizes to be awarded to outstanding entries as follows:

Elle Craftsman, Given in memory of Bruce Elle to the builder of a high-quality radio receiver of an old or new type.

Matlack Transmitter, Given for excellence in constructing or restoring transmitting equipment.

Display, Recognizes the entry considered to have the best informational value and quality.

Thompson Best of Show, Awarded in honor of early amateur Eunice Thompson, W1MPP, to entry considered to be the overall best.

People's Choice, Awarded to the entry that receives the most favorable votes from attendees and visitors to the contest. All entries including displays are eligible for this award.

AWA Conference Agenda

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RENCE AGENDA

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7 p.m.-**Crosley Historical and Top Awards Banquet**. Cash bar available. Various AWA awards will be presented. Program will be an old-time radio show presented by Gary Yoggy with actors from the Elmira little Theater.

9-11 p.m.—**Equipment Contest Viewing** continues - Salon A, B, C.

9-10 p.m.—**Auction Payment**—Registration Area.

11 p.m.-midnight—**Equipment Contest Pickup**.

SATURDAY (9-9-00)

8 a.m.—**Book Fair**—Pre-assembly Court.

8 a.m.—**Equipment Contest Pickup**.

9 a.m.—**The 32-Volt DC Farm Lighting System**, *Dale Goodwin* —Seneca-Onondaga rooms.

10:30 a.m.—**The Museum of Radio and Technology-An overview**, *Lloyd McIntyre*—Seneca-Onondaga Rooms.

Noon—**Finale Luncheon**—Luncheon with Contest Awards and Closing of the 38th Conference—Salon A & B.

2-4 p.m.—AWA Museum Open

SUNDAY (9-10-00)

2-5 p.m. — AWA Museum open

FLEA MARKET POLICIES

Following are the policies that will be in effect for the year 2000 flea market.

First, the market will run only in conjunction with the conference dates, from Wednesday morning to Saturday afternoon. *No* flea market sales will take place at the hotel parking lot prior to Wednesday. The flea market area will be sealed off, unavailable to anyone, until the gate opens at 6 a.m. Wednesday. The prohibition of non-conference flea marketing is a matter of hotel rules and our Special Use Permit required by the Town of Henrietta. **NO ITEMS CONTAINING MERCURY!**

Second, there will be only one class of site. All sites are treated the same and are issued randomly on a first-come, first-sold basis. Each member may pre-register for one or two sites, at $20 for the first and $35 for the second. Two sites to one member will always be adjoining. Pre-registration is highly recommended to assure a pre-assigned, numbered spot on the paved area. Everyone wanting to participate will get a spot. However, the paved-area, pre-numbered spots will probably sell out during the preregistration period. At that point we will start assigning spots on the grass on the Thruway side of the parking lot.

Third, flea-market headquarters will be located at the entrance to the market. Look for the big banner. This will be a full-service area where one can pay membership dues and registration fees, and sign up as a flea-market seller. Only AWA members may participate. Everyone needs to register for the conference—the flea market is only a portion of overall conference activities. A non member wishing to sell in the flea market is welcome to join, paying $15 dues, $20 conference registration ($24 at the door), $20 for the first site and $35 for the second site. (Site assignments dependent on availability.)

RULES AND CONDITIONS

EVENTS: Admittance to any activity, flea market included, requires a registration badge.

FLEA MARKET: Opens 6 a.m. on Wednesday. **NO ITEMS CONTAINING MERCURY.** New York State sales tax forms will be available. AWA not responsible for sales or tax. Neither AWA nor the Marriott is responsible for the security of personal property in the flea-market area. We are asked to confine market activity to the designated area to avoid the NY State Thruway right-of-way. KOA and other camp grounds are available in the vicinity. No overnight sleeping in the flea market area.

ANNUAL SIGHTSEEING TOUR

Not offered last year because of lack of support, the sightseeing tour is offered once more—by popular request—on a trial basis. The tour leaves the hotel on Friday, September 8, at 8:30 a.m. First you will have a two-hour trip on the Erie canal (on enclosed boats if weather is inclement)—passing through the locks at Lockport, NY. You'll lunch at Lift Bridge Cafe at the locks and visit Murphy's Orchards and shop in the afternoon. Cost for the package is $46.00. If you would like the tradition of a Conference sightseeing tour to continue, please be sure to support this event!

2000 ANNUAL CONFERENCE — EASY REFERENCE

	WEDNESDAY SEPT. 6	THURSDAY SEPT. 7	FRIDAY SEPT. 8	SATURDAY SEPT. 9
6 a.m.	Flea market opens			
8 a.m.	Registration; Book Fair	Registration; Book Fair; Check in For Communication Equipment Auction	Registration; Book Fair; Auction Preview; Contest Judging	Book Fair Equipment Contest Pickup
8:15 a.m.			Sightseeing Excursion	
9 a.m.		Communication Equipment Auction	Paper Collectibles Auction	32-Volt DC Farm Systems
10 a.m.			General Auction	
10:30 a.m.		Crosley WLW		Museum of Radio and Technology
11 a.m.	Members' Forum		Equipment Contest Viewing until noon	
Noon		Ladies Lunch	Auction Stop	Finale Luncheon
1 p.m.	Hallicrafters	Registration; Vacuum Tube Companies	General Auction continues; Contest Viewing until 5 p.m.	
2:00 p.m.				Museum open 2-5 p.m.
2:30 p.m.	News for Shortwave Listener			
3 p.m.		Main Auction Check-In		
3:30 p.m			Amateur Radio Topics	
4:00 p.m.	Key and Telegraph	Main Auction Preview (4:30 thru 6:30 p.m.)		
6:30 p.m.	Bus to Museum			
7 p.m.	AWA Museum open	Check-In for Old Equipment Contest (thru 10 p.m.)	Annual Historical Banquet	
7:30 p.m.	Beginner's Program - Evolution BC Receiver			
8:00 p.m.		Vacuum Tube Auction		
9 p.m.			Equipment Contest; Auction Payment	
11 p.m.			Equipment Contest Pickup	

THE OLD EQUIPMENT CONTEST – 2000 AWA CONFERENCE

The Crosley Corporation

By Geoffrey Bourne and Ralph Williams, N3VT

The AWA Old Equipment Categories for the 2000 contest are divided into two major groups; Theme and Standard. The Theme categories reflect the central historical purpose of this year's conference: a review of products and history of the Crosley Corporation. The Standard Categories: Receiver, Transmitter, Craftsman, and Tubes, encourage competition in more general areas of our hobby. These remain essentially unchanged from year to year.

This year, however, we *will* be making some changes in the Standard categories. You'll notice that receiver categories are now generally based on type of circuitry rather than number of tubes. The other categories remain unchanged.

As before we offer two transmitter categories; Spark and CW. And the Craftsman categories continue to fulfill a strong membership interest by offering opportunities to showcase conservation and restoration skills. The tubes category, newly introduced last year, provides an outlet for members interested in the history and operation of vacuum tubes from all eras.

THE THEME CATEGORIES

1. The 1920s
In the early 1920s Crosley made wide variety of battery sets. These included sets in the ACE and Harko series as well as those carrying the Crosley brand. This is the category where you would enter a model 51, 52, PUP, Trirdyne, V, VI, Etc.

2. The Metal Box Sets
During the 1920s many radio manufactures introduced metal cabinets. Crosley made some fine examples, so bring in your Show Box, Band Box or any other Crosley metal set.

3. Cathedrals and Tombstones—the 1930s.
In the 1930s the country was in the middle of The Great Depression. Money was tight and radio was becoming very popular; to maintain its share of the market, Crosley brought out a line of low cost receivers. A good example of this was the Cathedral radio. This would be the category to display a Model 124 or a nice tombstone. Another example would be one of the interesting floor models, such as the Playtime Grandfather Clock Radio.

4. The Crosley Fiver and Super Eight
Crosley produced a wide variety of inexpensive receivers. The "Fiver" was one of their most popular sets. This would be the category to enter this type of set.

5. Crosley Speakers
Over the years, Crosley produced many speakers. This would be the category for a Musicone or a Dynacone unit.

6. Television 1940-1960
When television came on to the market just about every manufacturer made a set. Crosley made a wide variety of sets from table tops to floor models. Bring in a fine example to share with everyone.

7. Company History
In this category we are looking for company information, sales quotes, engineering documents, technical information bulletins or other documents to add life to the company.

8. Advertising and Customer Documents
Enter your customer-oriented documentary artifacts: Magazine ads, dealer displays, giveaways, descriptions of radio or television programs, and customer instruction books are all examples of possibilities for this category.

9. Other Crosley Products.
Like other major corporations of its type, Crosley made many other products. These varied from refrigerators to cars. Surprise us! (Contest note: Cars will be displayed in the parking lot just outside of the contest room.)

THE STANDARD RECEIVER CATEGORIES

10. Passive Receivers
Any detecting device, not including vacuum tubes or solid state amplifying devices, whose purpose is to convert radio energy into intelligent signals.

11. 1920s Superhet Receivers.
Any 1920s receiver employing the superheterodyne circuit can be entered here.

12. 1920s Tuned RF Receivers
During the 1920s the TRF set was one of the most widely produced sets on the market. It was sold in kit form or factory assembled. Many built theirs from scratch using plans published in magazines. This is where you would enter receivers such as a Freshman Masterpiece or an AK 20.

THE COMMUNICATIONS RECEIVER

EDITED BY **WILLIAM FIZETTE, W2DGB**, RR 1, BOX 55, HENRYVILLE, PA 18332
PLEASE INCLUDE SASE FOR REPLY.

National Notes—A Continuing Series

Note #14: Removing the Coil Tray From a Sliding-Coil Receiver

Introduction

When James Millen's engineering team conceived the NC-100 receiver, introduced with much fanfare in 1936, I doubt that even they had a premonition of just how successful this unique design would become. While the production records have long since vanished, the documented claim is made that 90% of all US Navy ships during World War II used a NC-100 design of one sort or another. Add to that number all the sets sold to industry and the various government services, world wide, as well as to amateurs, and the impression is that overall production had to be in the tens of thousands.

Consequently there are still a lot of these radios out there, begging for some attention, to be put back into working condition. In the process of restoring two of these this spring and summer, I ran up against the nagging problem of just how to remove the heavy (massive is a good word) sliding coil tray so that I could work comfortably under the chassis. Spacing is quite tight, but the job is not difficult if you follow the approach outlined here.

If you are not familiar with the design, see Fig. 1. It is a front view of one of the early sliding coil sets. This model was manufactured in 1939 for the old Civil Aeronautics Authority. The white marker shows that the 13.6-30 mc band coils are in use.

Fig. 2 shows the bottom of the radio with the coil tray in place, supported by the long steel rod in the back and the pinion gear in the front. Fig. 3 shows the inside of the tray, with a clear view of the rack in front and the mounting ears for the steel rod in the rear. Not shown are the pins extending down from the coil blocks, which engage the spring contacts attached to the variable tuning capacitor.

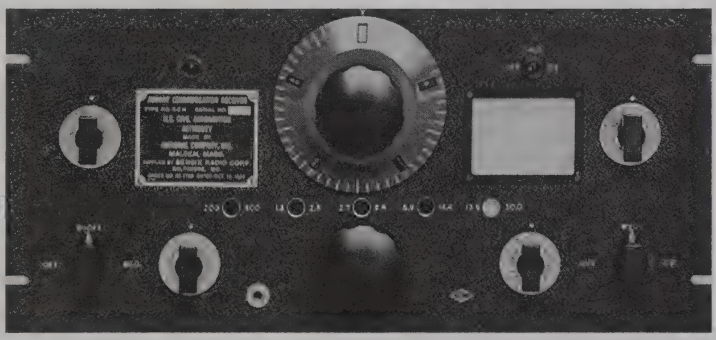


Fig. 1. This version if National's mechanical masterpiece was manufactured in 1939 for the old Civil Aeronautics Authority.

The basic idea was to have each coil in a totally shielded compartment, with only the set in use in the circuit. No fragile coil switches here; a modern and convenient and very rugged form of the concept of the plug-in coil.

Removing the Tray

Step 1. Place radio upside down on the bench. Remove the heavy band switch knob. Then,

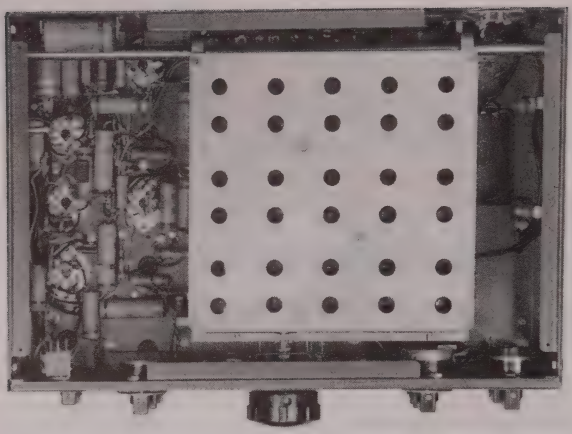


Fig. 2. Coil tray is supported by long steel rod in back, pinion gear in front.

using a fine flat file, dress down the shaft to remove the burrs and scars in the soft steel.

Step 2. Move the tray all the way to one end. Using suitable wrenches, gently unscrew the collar holding the pinion gear in place and slide the collar off, over the shaft.

Keep close track of the location of the various washers. The pinion gear is now loose and can be removed from the set. I recommend you put all the hardware in a separate bottle.

Step 3. The coil tray will now pivot on the steel rod. However, pause a bit. If you happen to have one of the models with a direct reading dial, you should see a woven metal cable that attaches to the coil tray. Remove it, and note how it is routed up to the main dial. Make a sketch if necessary.

If you have one of the earlier sets with the classic PW dial, as in Fig. 1, then remove the indicator. To do this, lift the tray up and slide it towards the center of the chassis so that the thin and fragile aluminum band marker and its two holding screws can be seen through the now-vacant band switch hole. Remove these two screws and then the indicator. Try not to bend it.

Step 4. Remove the two flat-head screws securing the ends of the large steel rod to the chassis. Turn the receiver around so the back is facing you, and move the tray all the way to your left. Lift the tray front up, and put a folded washcloth between the coil pins and the spring contacts.

Step 5. Find a piece of lumber about ¾" × 1½" by about a foot long and insert it between the chassis rear and the rod. If there is a capacitor in the way, as in Fig. 2, remove it first. Then, gently but firmly, spring the rod free of the chassis. You should now be able to slide the whole assembly up and out of the chassis.

You can now clean the tray and check the contacts. If necessary you can even remove some or all of the coils. Note the fiber sleeves inside the mounting ears. If they are loose on the rod, you may have to epoxy them in place. If they are swollen from grease, clean them out so that the rod moves back and forth freely. Clean any corrosion and rust off the rod with fine steel wool and oil. Lubricate the rod with some thin grease. Clean all the other parts and lubricate where needed.

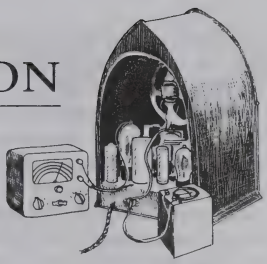
To reassemble, simply reverse the process. I tap the rod back into place, between the two tapered holding collars, using a wood block and a hammer.

There are variations in the hardware. For example, the steel rod may have a grounding strap in the center. The band change mechanism may have a dual action drive, as in the NC-200 and NC-240 series. The job is not difficult; I have found it takes about 10-15 minutes, tops. What you have to work with is a mechanical masterpiece, with some attached electronics, so study the problem carefully before you do anything.

Fig. 3. After removal of tray, coils and contacts become accessible for maintenance.

EQUIPMENT RESTORATION

EDITED BY **KEN OWENS**, 478 SYCAMORE DR., CIRCLEVILLE, OH 43113
PLEASE SEND CORRESPONDENCE DIRECTLY TO THE ABOVE ADDRESS,
INCLUDING SASE FOR REPLY.



Miscellaneous Topics

As a reminder about the deadline for items to be included in this column, the *OTB* Editor needs about 6 weeks lead time to set up his issue. Therefore I send in my copy on 3/15, 6/15, 9/15 and 12/15. Attention to these dates will assure timely publication of your contributions.

Many thanks to Frank Lotito for his suggestions of topics for this column (*OTB* V.41, #2, Letters to the Editor). Frank has challenged us to come up with ways to clean and repair wafer switches. OK guys, share your methods with us.

In my article on restoring Atwater Kent power packs (*OTB* V. 41 #2) I inadvertently failed to cite the article by Rodney Schrock (*OTB* V.32, #3, p. 18) describing his technique. Anyone tackling a restoration should read this article for useful insights.

♦ ♦ ♦ ♦

Years ago I wrote an article on plastics in radio (*OTB* V.34, #2). I was not optimistic about repairing cracked Bakelite cabinets having had mixed results myself. Recently, I corresponded with Leonard Aquilino (Cicero, NY) on the subject and offered him some suggestions. Here is his report:

"Recently, I found a nice Zenith Model 6D 312 in a Bakelite case. There was a crack along the entire side, but 'love at first sight' made me buy it anyway.

The first thing I did was read Ken Owens article (see above). It was not encouraging, but I checked with Ken for any new developments, especially the use of "super glue". I knew that it could be unpredictable. Sometimes there seems to be something in the Bakelite that inhibits cure. The glue never sets or, if it does, the bond is weak. I spread a drop of glue on a hidden surface and it did harden.

I cleaned the crack with soap and water using an old toothbrush. Then I cleaned the crack with alcohol and gave it a final water rinse. I spread the crack slightly with shims cut from an old tin can and let it dry thoroughly.

I made some large rubber bands from an old inner tube to go around the radio and clamp the crack together. I applied the glue, removed the shims, and let the rubber bands clamp the joint. I wiped off the excess glue immediately and walked away. It takes about 24 hours for "super glue" to attain full strength. Resist the temptation to do anything for two or three days just to be sure.

The "weld" was successful. Although the crack still shows, the case is solid. Later I plan to experiment with floating a bead of glue on the scar and blocking it out with wet/dry paper up to 900 grit."

♦ ♦ ♦ ♦

The next contribution from Clarence F. Bauer, KV4BY (Titusville, FL) involves rewinding a power transformer—something most of us would hesitate to undertake.

"A console radio with a magnificent gold-trimmed, black lacquer cabinet had been standing in the corner of a living room since the time it was purchased circa 1934. It had 5 bands covering .5 to 24 MHz, two 8" and one 10" speakers, the original line cord and plug and looked like new. The radio was in a home in South Carolina which was being cleared out prior to selling the house. I got the radio, loaded it into my van, and drove back to Florida with a big smile on my face.

The set was a Sparton Model 136. The chassis was very dusty, but bright and rust-free. This set uses 13 tubes. It has an RF amplifier, two IF stages, separate oscillator and mixer tubes, and uses four Type 2A5 tubes in P-P parallel for the output. The tuning indicator is a neon "Viso-Glo" tube.

I removed the rectifier tube, replaced the blown 3A line fuse (the first indication of trouble) and plugged the set into a Variac. The volt-

age was slowly raised. At 115V the set drew 10A and the fuse blew. Bad news. The high voltage secondary was shorted.

I advertised for a replacement and contacted a number of antique radio restorers with no luck. If this radio was ever to play again, I would have to rebuild the power transformer. I took it apart and stripped off the windings down to the primary. In the process, I found a burned section of the HV winding, but the primary was OK.

I obtained a quantity of 26 ga enamelled wire from a local transformer winding company which was not interested in rewinding the transformer for me. I then adapted an old hand-cranked movie film rewinder to hold the core and the wire and proceeded to wind 1600 turns in 16 layers of 100 turns each. Each layer was insulated from the previous one.

When the HV winding was finished, the 3 filament windings were rewound. This last was done by hand because of the heavy gauge wire. The transformer was reassembled and installed on the chassis. I added a 1/3A fuse between the HV center tap and chassis ground for extra protection.

I replaced all of the paper and electrolytic capacitors as well as the many carbon resistors that had changed in value. All the tubes were good except one of the 2A5s, which had an open heater. While restoring the chassis, I also found and corrected some butchered repairs made long ago. I plugged the set into the Variac and slowly raised the voltage. Everything worked; the B+ voltages were present and correct.

The dial is a drum with 5 band scales around its circumference. Each scale has a 2.5V lamp behind it which lights to indicate which scale is in use. The lamp sockets were rivetted to a bracket providing electrical connection to the shell. The rivets were corroded causing erratic or no operation of the lights. This problem was corrected by soldering a jumper wire from each shell to the bracket.

The IF section needed alignment, and I still need to touch up the dial calibration, but, with a 15-ft antenna lying on the floor, reception is very good on all bands.

The cabinet needed nothing beyond cleaning. I feel elated at having brought a 65 year old radio back to life."

♦ ♦ ♦ ♦

In *The OTB* V.41 #1, Alton DuBois, Jr. (Queensbury, NY) asked for help identifying a mystery set. I and numerous other readers quickly spotted it as a Sparton Model 5-15. The diagrams are in Rider, but Alton still has a problem which he and I have discussed at length. Rider shows a standard set using 01A tubes, but Alton's set clearly is designed for Kellogg 401 AC tubes.

All of the tube sockets except for the detector are missing one filament contact. There is no evidence that there ever was a contact. This is typical of sets using the Kellogg or Sparton-Cardon 401 tubes. One of the 2 large pins normally devoted to the filament was used for the cathode and the other had no connection to the tube. Heater voltage was input via a connector on top of the tube (Kellogg) or via studs on the side of the tube base (Cardon).

We also wonder why the detector tube has the standard filament wiring. The Kellogg tube should work here. Surely this set made for AC tubes wouldn't also require a storage battery for the detector. Why bother with AC tubes if you have to have a battery?

Do any of our members have information on this set to help explain the discrepancies?

Alton also likes to make reproductions of early radio equipment such as loose couplers. One problem is how to make the switch points used on early equipment such as Crosley.

Ordinary screws can be filed down to get rid of the slot, but the remaining metal is usually too thin to make a satisfactory switch point. The answer is to use filister head screws which have a cylindrical head and a shallow slot.

You can't find them at your hardware store. Alton is also interested in clocks which use this type of screw, so he checked with clock parts suppliers. TimeSavers, Box 12700, Scottsdale, AZ 85267 has them. He uses their part #16253 5/16 stainless steel screw. They are $1.50 for a package of 6. Many other sizes are also available.

He screws them into a board and files the heads down by hand. If you have a drill press, a better way is to chuck the screw, start the drill, and bring the screw down onto a file held flat on the drill table. Use a coarse file to remove most of the slot, then switch to a fine file to finish. The screw can be polished by bringing it to bear on increasingly fine grades of emery paper.

The switch shaft is a length of ¼" brass rod. The arm is cut from brass sheet and soldered to the shaft. Leave enough rod beyond the arm to attach an appropriate knob. The shaft rotates in a bushing mounted through the panel. (*I salvage the bushings from defective volume controls for this purpose. Ed.*) A collar with setscrew and a spring washer on the other end of the shaft retain the shaft assembly in the bushing.

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Franklin L. Pope—Telegraphic and Electrical Engineer, Part 1

By John Casale, W2NI ©2000, John Casale

It is not necessary to have an interest in the telegraph to appreciate the life and career of Franklin Pope. It is only necessary to think about why this one man influenced so many electricians, engineers, and telegraph operators during the 19th century. Why did his writings find their way into the libraries of most of these individuals? Why was his opinion so valued by some of the largest companies in the U.S.?

References to Pope are commonly found when researching U.S. electrical technology during this era. His lifetime activities as a telegraph operator, inventor, engineer, writer, explorer, artist, patent attorney, historian, and consultant made him a true expert. This one time business partner and mentor of the young Thomas Edison emerged from the telegraph industry to become one of the most respected electrical engineers in the country. In 1886 he was elected the second president of the American Institute of Electrical Engineers.

Franklin Leonard Pope's roots are in Great Barrington, Massachusetts. Born on December 2, 1840, he grew up with an interest in the mechanical devices of the day and was equally interested in drawing pictures of what he saw. These talents served him well throughout his life. As a boy he earned his spending money by sketching the locomotives that passed nearby along the Housatonic river and selling his work to railroad engineers and firemen.

Pope's earliest exposure to the telegraph was in the late 1840s when The American Telegraph Company constructed a line through Great Barrington connecting Bridgeport, Connecticut with Bennington, Vermont. An office was opened in Great Barrington and the 17-year-old Pope was recruited to be the operator.

Two years later, he was transferred to Springfield, Massachusetts, where he became the circuit manager for the wires associated with the Boston and Albany Railroad. In addition to his proficiency in Morse, Pope was considered to be an expert printing telegraph operator.

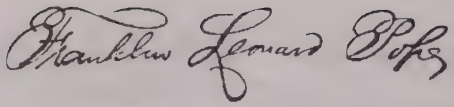
In late 1859 there was a consolidation of several competing telegraph companies which caused the lay-off of some local operators. Pope, who was retained, voluntarily resigned his position in order that a fellow operator, who had a family, could keep his job.

At age 20, he moved to New York seeking new employment. A long time subscriber to *The Scientific American*, he applied for the position of artist at the magazine. He worked in that capacity for two years, later becoming a staff writer. Thanks to the magazine's extensive coverage of recently issued patents, the young man

Franklin Leonard Pope

was able to gain valuable knowledge about the workings of the U.S. patent system.

With the outbreak of the Civil War in 1861, experienced telegraphers were again in great demand. Pope was re-employed by the American Telegraph Company and stationed in Providence, Rhode Island. In his spare time he created maps and drawings of American's system connecting New York and Boston. His detailed renderings of the lines, routes, and instruments caught the eye of Marshall Lefferts, engineer-in-



Pope's signature shows the spectacular penmanship that seems typical of early telegraphers.

chief for the Company.

Lefferts transferred Pope back to New York, promoted him to assistant engineer and gave him the assignment of tracing the company's entire system. At this time, the Company's lines and offices extended between Maine and Virginia. During the next two years, Pope created maps and drawings of every route, the types of insulators, the exact placement of the wires on the poles and the instruments and batteries that were used in each and every office.

Pope's intense exposure to American's far-flung system gave him a unique background in telegraphic technology. One of Lefferts' goals in giving the talented young man this assignment was standardize the instruments used by the Company. Pope's findings contributed to what was likely the first such plan used at a large telegraph company.

On July 13,1863, riots broke out in city of New York protesting the enforcement of the Federal Conscription Act, which provided for drafting men into the Union Army. Over a hundred people were killed, and the American Telegraph Company lines to Boston were cut, preventing critical war-time communications. Marshall Lefferts directed Pope to try and reestablish a circuit to Boston.

Disguised as a farm laborer, with tools and a portable telegraph instrument hidden in a bag of oats, he and headed out to find the problems. Using his intimate knowledge of the routes, he found the multiple breaks that had been made in the 15 mile stretch between New Rochelle and the Harlem River.

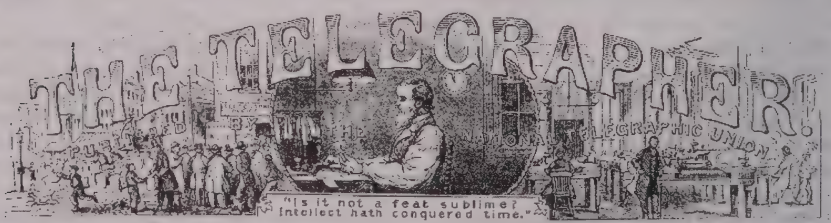
Under the cover of darkness, with the ever-present threat of attack by armed and drunken rioters, he made temporary splices to the downed line. These were run along bushes and low trees, leaving the broken wires hanging from the poles to look as if repairs had not been made. By daylight, Pope had pieced together a temporary circuit to Boston.

The National Telegraphic Union, made up of telegraphers from across the country, was formed in 1863. Pope became New York district secretary. The organization published a very popular magazine called *The Telegrapher*. This periodical was the professional telegrapher's only link to new developments in the industry.

Franklin Pope had a long association with *The Telegrapher* as a writer, artist, and editor. His early articles were signed "Electron." Telegraphers nationwide came to rely upon Pope's ability to explain seemingly complicated new systems with clear and practical descriptions.

In 1864 the board of directors of the Western Union Telegraph Company were concerned about Cyrus Field's failure to establish a reliable telegraph connection to Europe via a cable under the Atlantic ocean. The alternative was to connect San Francisco with Moscow by constructing a line overland from Vancouver, British Columbia, through Russian America (Alaska), beneath the Bering Strait, then overland again through Russia and on into Moscow. From there, all western points into Europe could be reached.

This undertaking was considered to be a challenge equal to that of laying the Atlantic cable. Most of the route had never been charted. The Russian government committed to extending their system east from Moscow to the Pacific. Western Union organized the Western Union Russian Extension Company to construct a line to link with Russians wires. The project also received encouragement from President Lincoln "with the cordial good will and support as well of this government as of those of Great Britain and Russia." Franklin Pope was appointed Assistant Engineer and Chief of Explorations in British America. His responsibility was to survey the route from Vancouver to the Yukon River, a distance of approximately 1500 miles. Portions of



Masthead for "The Telegrapher" was designed by Mr. Pope.

THE LOUDSPEAKER

EDITED BY **FLOYD A. PAUL, W6THU**, 1545 RAYMOND, GLENDALE, CA 91201
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After twenty-one years of being a column editor for *The OTB* it is time to give the floor to a new editor. This editorship has been very rewarding for me and, judging from the letters I've gotten over the years, many of you have enjoyed the eighty or so articles that have appeared in this column. Please keep my address handy and feel free to write about speakers—particularly horn speakers. You are also invited to phone me at 818-242-8961.

In this final column I'm adding a few horns that have surfaced in the past few years. They are identified by trade name and manufacturing name where known. All of this information came to me via collector's letters.

1. Peter Spilger, West New York/New Jersey, Wood bell and a green decal.
2. Radio-Tone Mfg Co., Chicago, metal base, neck and bell (5½ in. diameter and 14¾ in. high).
3. Kenny Company, "Seafone," 620 Div. St., N. Y. Sea shell on a base.
4. Upright aluminum straight-neck cast-metal horn with capital letters "CW" or "GW" on the base.
5. Reedena Tuner, wood bell.
6. Still-O-Vox, slender, thin metal horn (perhaps 16 inches high)

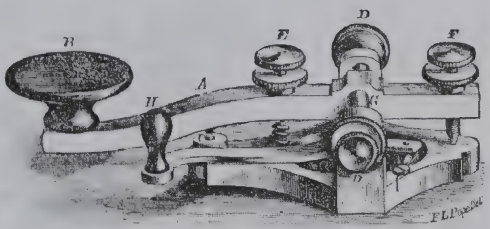
All of my *OTB* horn articles have been printed in booklet form and are available now. The booklet credits co-authors, references original publication dates, and is indexed by manufacturer name. Contact me for details.

Good hunting!

KEY AND TELEGRAPH

the route were intentionally explored during the harsh winter months because the sleighs could travel over the dense underbrush on the snow cover.

In a letter to his younger brother, Henry, back home in Great Barrington, Pope gives this description of the conditions encountered while heading for the Stikeen river, a point about 700 miles north of Vancouver.



A Pope drawing of a key manufactured by L. Bradley.

We set out on our journey into the unknown wilderness, with no guide but the compass, and the certainty that the river Stikeen lay at an unknown distance to the northwest. Our greatest difficulty was caused by the depth, and more especially the lightness of the snow, in which the dogs would sometimes struggle for an entire day, with merely their heads above the surface, we drawing the load ourselves, and sometimes even carrying the dogs on our backs, when they were too much exhausted to move.

In August of 1866, with the line was operational to the Skeena River, approximately 500 miles north of Vancouver, construction crews received the news over their own wires that Cyrus Field's recent attempt with the Atlantic cable was a success. The directors of The Western Union Company officially halted operations of the overland project in March, 1867—absorbing the entire cost of over 3 million dollars. The charts and maps Pope created before and during the expedition were considered by leading geographers of the day to be the most accurate ones existing for that portion of the world.

Upon his return to New York, Pope continued to make illustrated contributions to *The Telegrapher*. He also became the superintendent of the Gold and Stock Reporting Telegraph Co., where he improved and modified an instrument invented by S.S. Laws which reported changes in gold prices to the offices of about 140 New York area brokers.

Part 2 (conclusion) of this article will appear in the November Key and Telegraph column.

BY WALTER H. SMARTT, M.D.

THE ALSIMAG STORY

Few radio hobbyists will recall the American Lava Corporation, which was on the cutting edge of electronics development over most of the 20th century. Its first logo was "ALCO" (for American Lava Corp.) and later "AlSiMag" (for aluminum, silicon and magnesium; the principal elements of their products). The firm was the largest and finest producer of ceramic insulation worldwide. My family was deeply involved early on, and my dad was secretary.

I want to tell the AlSiMag story from a hobbyist's standpoint while I can still remember details. Unlike Isolantite, which was a French company, ALCO did not place its name or logo on any electronic product. There was no retail business; they made ceramic products for other corporations.

Before World War I the company was called "Sunshine Lava," and was owned by the Thurnauer family of Germany. Sunshine originally made only tips for gas burners. These were machined from solid soapstone [steatite or talc, chemical formula: $H_2Mg_3(SiO_3)_4$].

The most popular of the tips was the "Cabot," which was used in home lighting. With this tip, the flame burned red and in a fan shape. The auto headlights of the time also used a gas flame, but the fan shape was useless for this purpose.

For headlight use, ALCO developed what was called the "Lava Tip." This burner was y-shaped with holes on the inside of each end of the tip so gas could exit. Additional holes were provided to admit and mix ambient air. The flames were bluish and, where they crossed, very intense and concentrated. This made it possible to collimate and magnify the beam as required in spotlights.

PJ Kreusi (at desk) surrounded by ALCO staff about 1904. Kreusi, a son of Edison's key assistant. would serve at American Lava for some fifty years.

2157 PLUM NELLY RD., RISING FAWN, GA 30738

The first manager hired by the Germans was P.J. Kreusi of Swiss descent, the son of Edison's assistant in the development of electric lighting, telegraphic equipment, the phonograph, and other inventions. Kreusi selected Chattanooga as a location because he wanted to marry Myra Smartt, a Chattanooga girl, and because soapstone could be obtained from nearby Hewitt, North Carolina. In 1902 operation began in Market Square near the original Coca-Cola bottling plant.

During World War I the company, being German, was seized by the U.S. Government. However Kruesi allowed to stay on as operator. After the war he bought the plant, later selling 51% of the stock to his brother John and the rest to other employees. After John died intestate, P.J. had to return as president to look after his family's holdings.

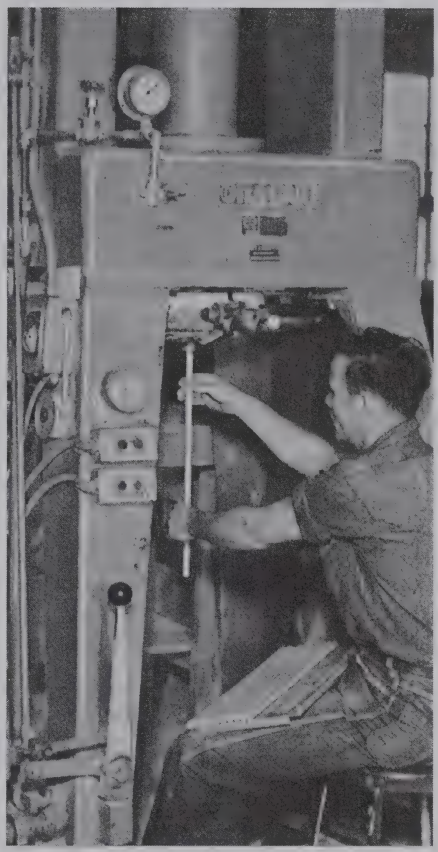
The products were produced by machining raw soapstone on small turret lathes run by belts from a central power plant. Operators would clamp a small square piece of soapstone in a chuck and bring various steel tools to bear on it, eventually producing the gas-burner tip (or, later, the coil form, spark-plug core, or standoff insulator). Fair wage was 14 cents per hour and talcum powder was everywhere!

Everything had to be made oversize because the sintering process, carried out in periodic kilns, made items shrink. The kilns were fired by kerosene that cost 8 cents per gallon. If something came out large, it was run back through the kiln at a higher temperature; smalls were discarded.

What couldn't be shipped to customers was my treasure trove. The myriad of shapes were better than Lincoln Logs or Erector Sets as childhood playthings, and they were free. Sadly, I have saved fewer than a dozen pieces!

As the business became more technical, the shrinkage in firing necessitated the use of oversized drills and taps which had to be made in-house. Firing was at around 1800 degrees Fahrenheit. The temperature was controlled by watching pyrometer cones through a peephole. These would sag and collapse at the proper temperature. The same method of temperature control was used in the firing of pottery and porcelain.

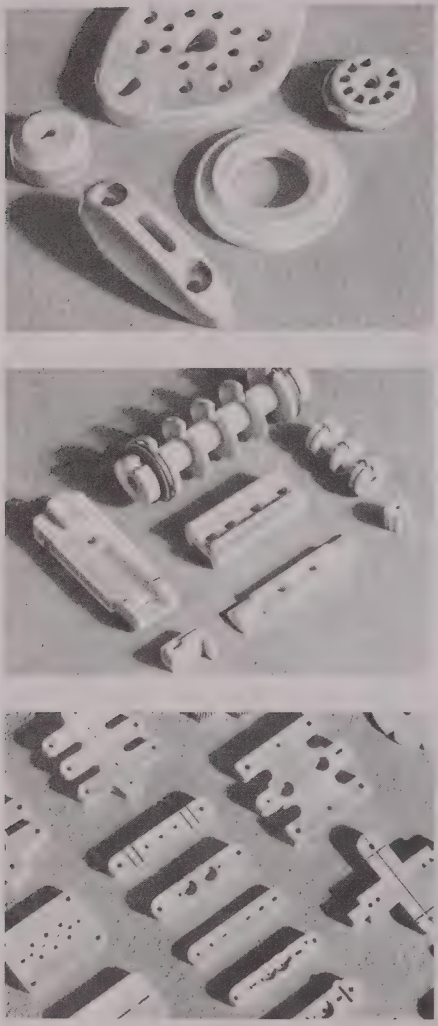
The "Lava" in the company name referred to the extreme heat used in the manufacturing process—similar to that of the molten rock produced by volcanoes. This caused much confusion because many people thought the company made "Lava" soap.



Worker removing piece from extrusion press, early 1950s.

I remember conducting "industrial espionage" on Sunday afternoon rides with my father. A competitor, D. M. Steward (still in existence) was close by, and Dad would drive past to see how many lights were on in the building and to study their junk heap for a glimpse of what they were making. He was always trying to get a jump on the competition.

The company's first pressed-talc (ground-up soapstone) product was a holder, about the size of a pack of cigarettes, for a glass-vial mercury switch. It was made on a hand-operated porcelain press looking much like Ben Franklin's printing press.



Alco-manufactured parts for the electronics industry. Items at right are spacers used in vacuum tubes.

Adding a pressing department required new methods, and machinery like grinders, sifters and a mixer called a "melanger." Borrowed from the chocolate industry, the mixer crushed and mixed dampened talc in a granite dish about eight feet in diameter rotating under two giant granite rollers.

Automatic machines, later called "pill presses," were made from used Aspirin presses. These could sift powder into a mold or die, bring top and bottom punches to bear with great pressure, and spit out things like toaster hooks, trimmer bases, radio-tube support elements, switch plates, and the ceramic beads used in early coaxial cables. These machines were also used during the 1930s Depression to make underwear buttons.

Products so made were damp and had to be dried before firing. When finished, the piece was hard enough to cut glass. This process finally could produce a uniform product held to very close tolerances. Customers flocked in, knowing their orders could be filled with absolute uniformity.

Old-fashioned ingenuity was supplied by a natural-born genius, one Blake Hullender. Blake was capable of de-bugging anything coming from the engineers and making it work clear through to the shipping department. Tube bases, tube sockets and condenser discs were made by the millions!

The most ticklish product to be developed was a result of a need for radio-tube manufacturers to insulate filaments in the new AC-heated tubes from their surrounding cathodes. Early AC-heated tubes like the Sonora RA-l used 14-volt toy-train transformers to heat a filament wound around a threaded soapstone insulator about half the size of a pencil. This took forever to heat up, due to the mass of the insulator. What seemed to be needed was an insulator the size of a pencil lead, or smaller, which had one or more longitudinal holes through which the filament wire could be pulled.

GE developed a way to do this and, through the Edison-Kruesi connection, rights to the process were given to ALCO to perfect and mass produce. The process involved making small batches of mostly magnesium oxide in ball mills, tumbling for a very long time to grind and mix the ingredients to a very small particle size. (This process was locally called "MGO" for its principal ingredient.)

The prepared powder was moistened and loaded into an ordinary Alemite grease gun. A die at the outlet formed a spaghetti-like strand with a concentric hole. As the operator cranked the grease gun with one hand, he used the other to move a grooved wooden plate to accept the extruded product. Quite a feat of coordination!

The completed strands were dried, cut to length, then fired in an electric muffle furnace the size of a carton of cigarettes. The furnace was kept supplied with 100% hydrogen to keep the heating elements, made of molybdenum wire, from burning up. This was a lucrative activity until manufacturers found that all they had to do was to dip or spray their filaments with an insulating coating and stuff them into a cathode.

The ALCO insulator sped up the heating of

the cathode, as in the 227 tube, but the sprayed filaments gave quicker heating and lower cost to the manufacturer. And so profitable enterprise went down the drain!

About the same time, an extrusion process was developed for much larger insulators. It used the same powder as the presses, but dampened and placed in a large cylinder with a die on one end. The die was selected to produce whatever size tube was required. A hydraulic ram was brought down on the cylinder, all air evacuated, and the material shot out under pressure through the die.

Tubes of material up to four inches in diameter and four feet long could be formed. After drying they could be cut, drilled and grooved to customers' specifications. Solid bars and many other shapes were made by extrusion.

Very few insulators, unless of heroic size, were made by a potter's wheel or by filling a mold with slip. This was the common method used by companies making things like toilets and insulators for high-tension power lines, where tolerances did not have to be held to close limits.

The soapstone originally obtained from North Carolina was not terribly pure, but sufficiently so for making gas burners. As electronic uses expanded, a need developed to find talc that did not contain iron. Italy supplied much purer talc, but it often blistered on firing. A similar raw material was found in South Africa. Consisting of almost pure aluminum silicate, it came over at irregular intervals as ship's ballast.

During World War II, this source began to dry up. The English owner of the mine in South Africa would not help, but he did tell Dad he could come over and dig all the talc he wanted. The first plane flight of Dad's life, then, was to South Africa! He doubled his insurance and bid all of us goodbye forever. Natives were hired, the talc was cut out in blocks and floated down the river on logs for shipment to the U. S. Dad got back also!

After that experience, he was determined to find suitable talc at home. On an expedition to Sedro-Woolley, Washington, he found the needed source and made a local farmer rich. Later, additional deposits were found in California and Montana.

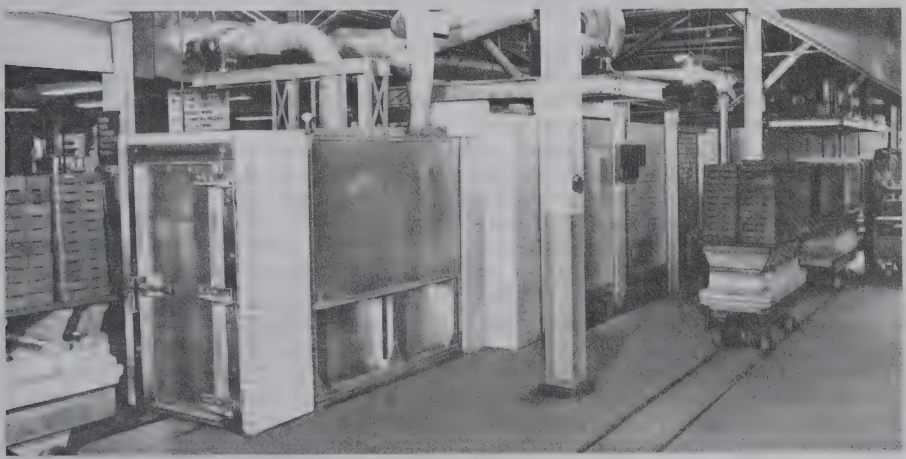
I remember when Ford began to order products from ALCO. The first item was a grooved tube used to make a resistor for the primary of the spark coil. Next was a ceramic base for a rheostat to control the brightness of dash lights, then spark-plug cores, then something else until about a third of ALCO's business was with Ford. Then the axe fell!

Ford made an offer to purchase the company much below its real worth. Kruesi wisely refused the deal. Ford threatened to withdraw all its orders unless he sold. He would not, so the orders vanished! ALCO sank into the doldrums; things got tight. ALCO sold its insulators to anybody it could, even at a loss.

Cornell-Dubilier benefitted; they bought ceramic tubes to put their capacitors in at a rate lower than the paper tubes they had been using.

A Thurnauer son, hired just prior to World War II, was a ceramic engineer who had been run out of Germany by Hitler. He was gifted at developing insulating materials of different

(continued on page 53)



One of several types of kilns in use at Alco for final firing of products.

New Books and Literature

EDITED BY **WILLIAM E. DENK, W3IGU**, 81 STEEPLECHASE RD., DEVON, PA 19333-1226

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Marconi My Beloved

By Maria Cristina Marconi. Copyright 1999 by Elettra Marconi, Dante University of America Press, 17 Station Street, P. 0. Box 843, Brookline Village, Boston, MA 02447. 6¼ by 9¼ inches, 388 pages, hard cover. $29.95 at Barnes & Noble.

The flyleaf states that this is the first English language edition, and has been edited, enlarged and updated by Elettra Marconi. This reviewer found it very interesting, but don't buy the book if you are looking for a deeper insight into Marconi's inventions. It is essentially an account of the second Mrs. Marconi's life with her husband and with daughter Elettra, and their many travels.

I found it odd that there was only the briefest mention of the first Mrs. Marconi, and nothing of Elettra's half-sister, Gioia, who is well known to AWA members, having spoken at the 1995 AWA Annual Conference. For that part of Marconi's life you'll have to read *My Father, Marconi* by Degna Marconi, published 1962. Regarding the first wife, on page 22 the second wife writes, "On his return to the Catholic faith Marconi asked the *Sacra Rota* (the ecclesiastic high court) to annul his marriage since his first wife had already remarried". This request was granted and in early 1927 his "first marriage was declared null and void", making possible the marriage of Guglielmo and Maria Cristina on 15 June 1927.

The book contains interesting accounts of the many voyages taken by the Marconi family on the yacht *Elettra*. One such voyage took them around the world, with stops in the United States, Japan, China and India. The author reports that the yacht was built in Scotland in 1911, was about 80 meters long, weighed 800 tons, and had an average speed of twelve knots. It carried a crew of 25 men. By 1933 Marconi had made eighty seven Atlantic crossings.

Elsewhere in the book, Marconi is quoted (1928) as saying "I have been mistaken. Up until now I have been working on long waves, but I must work on short waves instead."

Repeated emphasis is placed on the close relationship between Maria Cristina and her husband. A typical passage reads "he (Marconi) was convinced that much of his success was due to our love for each other."

One of the numerous pictures (dated 1930) in the book shows Marconi and Benito Mussolini aboard the *Elettra*. In one chapter, "Marconi and Mussolini," the author reports that her husband "bravely warned Mussolini against allying with Hitler in a war against England."

The last five chapters of the book were written by daughter Elettra. One of these deals with the *Titanic* disaster and its effect on early wireless.

♦ ♦ ♦ ♦

The Radio Handbook For Amateurs and Experimenters (1936 edition)

By Frank C. Jones. Reprinted 2000 by Lindsay publications, Inc., Bradley, IL 60915. 6 by 9 inches, 360 pages, soft cover. Price $19.95.

This is a beautifully done reproduction of one of the technical "bibles" of the period. If you don't have an original copy of this book, here is your chance browse a classic! It's a great benchmark for the state of the radio art in 1936.

The Handbook's first 25 pages are devoted to an introduction to amateur radio, electrical fundamentals, vacuum tube theory, amplification, detection and oscillation. This is followed by 32 pages on receivers and 14 pages on tubes. There are 60 pages on transmitters.

Radio-telephony and modulation is covered in about 50 pages. There is a 17 page section on "Ten Meter Equipment," and a 35 page section on "Ultra-High Frequency Telephony." 25 pages are devoted to antennas; 12 to power supplies; and 27 to test instruments, calculations, logarithms and decibels.

At the end of the handbook there are 32 pages of interesting ads placed by suppliers of radio equipment of the period.

♦ ♦ ♦ ♦

Nikola Tesla's Teleforce and Telegeodynamics Proposals

Leland I. Anderson, Editor. Published by Twenty First Century Books, P.O. Box 2001, Breckenridge, CO 80424. 8½ by 11 inches, 127 pages, soft cover. $24.95.

In 1934, at age 78, Tesla announced two astonishing inventions. The first, Teleforce, was a particle beam projector that Tesla intended to be

used as an instrument of national defense. He declared that with this machine a nation could bring wholesale destruction upon invading armies and shoot down fleets of incoming aircraft while they were 200 miles away.

The second invention, Telegeodynamics, involved a method of transmitting mechanical energy with minimal loss over "any terrestrial distance" allowing for a new means of communication and a technique for the location of subterranean mineral deposits.

According to Editor Anderson, the Tesla papers dealing with these inventions "hidden for more than 60 years" are presented in this book for the first time. Of course, there are no corresponding patents.

To this reviewer, the inventions—particularly "Teleforce"—seemed a bit "far out." No doubt it did too to Editor Anderson who placed the following notice on page 119 of the book:

After an accident in 1935 when Tesla was hit by a taxicab, John O'Neill, Tesla's first biographer, observed that Tesla seemed to suffer increasing periods of irrationality... (and that) these proposals were made during this period.

No matter. Readers, and especially fans of that truly great inventor, will find this book a real contribution to the literature on Tesla.

♦ ♦ ♦ ♦

Nicola Tesla—Guided Weapons & Computer Technology

Leland I. Anderson, Editor. Published 1998 by Twenty First Century Books, P.O. Box 2001, Breckenridge, Colorado 80424. 6¼ by 9¼ inches, 256 pages. Hard cover, $31.95; soft cover, $18.95.

The first 124 pages of this book is comprised of a portion of the record in the U. S. Patent Office of Patent Interference No. 21,701 of 1902 between a patent application of Nikola Tesla and an application of Reginald A. Fessenden.

These pages should be of interest to radio historians and to admirers of Tesla, because here are recorded the words and language of Tesla himself. The inventor answers questions put to him by his patent attorney, Parker W. Page, and by Fessenden's patent attorney, Bayard H. Christy. Included are the depositions of Tesla employees George Scherff and Fritz Lowenstein.

This reviewer found it most interesting to read the depositions because Tesla, born in Croatia of Serbian parents, had arrived in the United States (at age 28) just eighteen years before the proceedings. It is apparent that, in those eighteen years, Tesla had gained superb mastery of the English language. The issue of the patent interference was to determine priority of invention, as between Tesla and Fessenden, of the following count (claim) of the interference.

In a system for the transmission of electrical energy, the combination of means for producing two or more distinctive kinds of disturbances or impulses, of receiving circuits each tuned to respond to waves or impulses of one kind only, and a receiving device dependent for operation upon the conjoint action of the several receiving circuits.

That count is now claim one of Tesla patent No.725,605, the Patent Office having awarded priority of invention to Tesla. Editor Anderson regards this patent and related patent No.723,188 as "the Tesla AND logic gate patents." But IBM need not worry since both patents are long expired. In the book's Appendix there are included copies of nine Tesla patents, including the two referred to above. This new book is a valuable addition to the published literature on one of our great inventors.

ALSIMAG, *continued from page 51*

properties. In a pilot plant, many sorts of raw products were tested and procedures perfected to produce insulation for various possible uses. Always "firstest with the mostest."

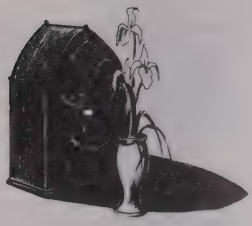
His crowning achievement was developing insulators, thread guides and cutting tools from titanium dioxide. The process was perfected before it was needed. Titanium dioxide, at the time, was mined only for the making of white paint.

Dad agreed to purchase all the raw material that was not used for paint. It was stockpiled until a gargantuan need developed in television for its special properties. Other companies soon became able to make the same product, but they could not buy the raw material.

Later another bonanza developed. ALCO was in on the development of the secret proximity fuse in World War II. They outstripped almost all their competitors and were early into producing ceramic substrates for mounting electronic parts.

The company was sold in the fifties to 3M, and Dad retired after 45 years. He had been fired as a youngster by Brock Candy Company because he did not open the retail store one Christmas morning. He was lucky!

Recent Radio, TV and Entertainer Obituaries



COMPILED BY **CHARLES S. GRIFFEN W1GYR**
1225 NEW BRITAIN AVE., WEST HARTFORD, CT 06110-2405

Note: When known, the date of death is indicated in parenthesis.

REX ALLEN, 77, (12-17-99) cowboy actor and singer. Allen, known as "The Arizona Cowboy ," made more than twenty films for Republic Studios. Some of his film credits include *The Arizona Cowboy* (1949), *Under Mexicali Stars* (1950), *The Overland Trail* (1952) and *The Phantom Stallion* (1953). On television, Allen was the star of *Frontier Doctor* in 1958 and appeared on such variety shows as *Five Star Jubilee* on NBC in 1961. His voice was frequently heard as narrator for a series of Walt Disney's wildlife films in the 1960s.

TOMMY COLLINS, 69, (3-14-00) country singer and song writer. Collins joined Capitol Records in 1953 when the new label was taking advantage of the opportunities presented by Southern California-based country acts. He wrote *You Better Not Do That*, which took him to number two on the national charts in 1954. Some of his other early hits include *Whatcha Gonna Do Now, Untied* and *It Tickles*. Among the chart-topping songs Collins wrote for major country stars were *Carolyn* and *The Roots of My Raising* for Merle Haggard. Collins was inducted into the Nashville Songwriters Hall of Fame in 1999.

JAMES T. CORDON, 53, (n.d.) broadcast systems design engineer. Cordon was employed by NBC Radio and Television for nearly twenty years. His accomplishments for NBC include the installation and maintenance of a new NBC radio network facility in the mid 1980s, the introduction of McCurdy matrix intercom systems to NBC's Rockefeller Center headquarters in 1989, and the design and installation of NBC's broadcast communications system for the 1996 Summer Olympics studios in Atlanta. He began his broadcasting career at WRAL(FM) in Raleigh, NC in the 1970s where he worked as Operations Manager.

BILL DANIELS, 79, (3-7-00) cable television and sports programming pioneer. In 1952, Daniels constructed a Community Antenna Television system in Wyoming, becoming the first to relay a broadcast signal using microwave technology—providing more viewing opportunities for the public. He formed Daniels & Associates in 1958 to provide funding for his own projects and those of others in the infant industry. The firm later became Daniels Communications. Daniels owned and operated hundreds of cable television systems throughout the country before consolidating and selling them. In 1980 he formed PrimeTicket, a California regional sports network, which became the national Prime Network—the forerunner of what is now Fox Sports Net.

ALEX DREIER, 83, (3-12-00) radio and television commentator. Dreier was working for United Press in New York City when he was reassigned to Berlin in 1941. That year he joined NBC and found himself under increasing surveillance by the Gestapo. He left Berlin for London on December 6, 1941, a day before the United States entered WWII. Dreier was heard on NBC time slots from 1942 until 1956. From 1948 to 1965 he worked for affiliates of NBC and ABC in Chicago. He moved to Los Angeles in 1967 and continued reporting until 1992. Dreier was the recipient of seven Emmys.

RICHARD ALLEN DUDLEY, 84 (2-2-00) radio and television announcer. Dudley, known as "The Voice of NBC," began his career as an NBC page in 1938. By 1940 he was an NBC staff announcer. Dudley was one of the first announcers to broadcast the bombing of Pearl Harbor on December 7, 1941. In 1943 he was drafted and served as Program Director for the Armed Forces Radio Network in London. After the war he returned to NBC in New York, where he worked as an announcer and performer for 40 years until his retirement.

DOUGLAS ELTON FAIRBANKS, JR., 90, (5-7-00) actor and television producer. Fairbanks appeared in about eighty films starting with *Stephen Steps Out* in 1923. Some of his best-known films include *The Dawn Patrol* (1930), *Love is a Racket* (1932), *The Narrow Corner* (1933) and *Having a Wonderful Time* (1938) with Ginger Rogers. In 1942 Fairbanks was cast with other Hollywood stars on *This is War!*. The anti-fascist series aired simultaneously on all four networks. Later in the decade Fairbanks hosted *We Care* on ABC, and in the early 1950s he was heard on NBC's *The Silent Men*. From 1953 to 1957 he hosted and produced

a half-hour syndicated television anthology series called *Douglas Fairbanks, Jr., Presents.*

JACK GIBSON, 80, (1-30-00) pioneer of black radio and music. Gibson began his radio career on *Here Comes Tomorrow*, the first soap opera featuring an all black cast, on WJJD in Chicago in 1945. In 1949 he participated in the opening of the first black-owned and operated radio station in America, WERD in Atlanta. In 1962 he left radio to become the first National Director of Promotions and Public Relations for Motown Records, and from 1966 to 1969 he was the Midwest Regional Manager for Decca Records. From 1969 to 1972 he was VP in Charge of Special Projects for Stax Records. Gibson received many honors and awards, including the U.S. House of Representatives—101st Congress "Tribute For Achievements in Black Radio" in 1991.

FRASER I. GORDON, 91, (1-27-00) broadcast journalist. Gordon, who began his career working in radio news in 1931, joined NBC's WEAF in New York City in 1935. In September 1939 he was the live on-camera announcer when President Roosevelt threw the switch to introduce the World's Fair attendees to a new medium called "Television." In 1943 Gordon joined the ABC Blue Network for wartime reporting assignments in North Africa and Europe where he was often the first to break war news. After the war he was ABC's designated correspondent to the United Nations at Lake Success, NY. He later helped start NBC's *Monitor*, a round-the-clock radio news and features program, which was aired nationally. Gordon was associated with the program for 19 years as a writer, producer, editor and correspondent.

BOB HITE, SR., 86, (2-18-00) radio announcer. Hite was one of five announcers for *The Lone Ranger* program which was heard on radio from 1933 to 1954. He began his career at WXYZ in Detroit where the program originated three times a week. Hite also announced for *The Green Hornet* which was produced by that station. During WWII he worked for CBS in New York City where he reported on the news from their correspondents on the front lines and eventually announced the war's end. He also introduced Frank Sinatra the first time the singer appeared with the Tommy Dorsey Band.

PEE WEE KING, 86, (3-7-00) songwriter, singer and bandleader. With Redd Stewart he wrote *Tennessee Waltz,* which Patti Page turned into a smash hit with her 1947 recording. Some of his other hits include *Slow Poke*, *Walk Me By the River* and *Napoleon's Retreat.* King began his career playing accordion with local polka bands in Milwaukee, but later changed to country music. He performed on the radio program *Mid-Day Merry Go Round* in Knoxville in 1936, and joined the *Golden West Cowboys* band. King later became leader of the group, which became the first full-time band for WSM's *Grand Ole Opry* in 1937.

DURWARD KIRBY, 88, (3-15-00) versatile radio and television entertainer. Kirby is probably best remembered for playing second banana on *The Garry Moore Show* and for co-hosting *Candid Camera*, He began his radio career while in college and continued it in the Midwest, including Chicago, where he announced for *Don McNeill's Breakfast Club* in 1941 and later for Garry Moore's comedy-variety show, *Club Matinee.* Beginning in 1950, Kirby was the announcer and performer on *The Garry Moore Show*, which was simulcast on CBS radio and television. He remained with the variety series of the same name that ran from 1958 to 1964 and from 1966-1967. Kirby appeared on CBS Television's *Candid Camera* for from 1961 to 1966.

HELEN MARTIN, 90, (3-25-00) character actress. Martin was a founding member of the *American Negro Theater* in Harlem and was among the first African American actresses to appear on Broadway. She made her Broadway debut in Orson Welles's 1941 production of *Native Son.* Other Broadway credits include *Deep Are the Roots*, *The Long Dream, The Amen Corner* and *Purlie Victorious.* Beginning in the early 1970s she appeared in such television shows as *That's My Mama, Good Times, Benson, Full House, Roots* and *227.* Some of Martin's film appearances include *Cotton Comes to Harlem*, *Repo Man*, *A Rage in Harlem*, *Beverly Hills Cop III, Bulworth* and *Hollywood Shuffle.* She recently completed the filming of *Something to Sing About.*

SIG MICKELSON, 86, (3-24-00) first president of CBS News. Mickelson, who joined CBS Radio in 1943, was put in charge of news and public affairs at CBS Television in 1951. He helped build CBS News during the early days of television by innovative programming and the hiring of talented people. He hired Walter Cronkite to anchor the first commercially sponsored television broadcast of a political event, the 1952 presidential convention. The next year he oversaw the first same-day U.S. broadcast of a foreign event: the coronation of Queen Elizabeth II. Mickelson also hired Fred Friendly to collaborate with Edward R. Murrow on *See it Now*, a documentary series known for its piece on anticommunist Senator Joseph McCarthy in 1954.

CLAIRE TREVOR, 91, (4-8-00) actress. Trevor is probably best remembered for her film performances in *Dead End, Stagecoach* and *Key Largo*, for which she won a supporting actress

(continued on page 56)

MICS AND MEN

EDITED BY **GEORGE A. FREEMAN**, 102 E. MAIN ST., MADISON, IN 47250-3411. PHONE (812) 265-6878.
E-MAIL RALOGEUM@AOL.COM. *PLEASE INCLUDE SASE FOR REPLY.*

Amperite SR 80 With the Casa Loma Band

It is March, 1937. Band leader Glen Gray has worked out a new formula for himself and the boys. Gray put aside his saxophone and became conductor. The Casa Loma band was incorporated. Band members became stockholders in Casa Loma, Inc. Pee Wee Hunt sings, plays trombone and is vice-president. Besides being a featured vocalist, Kenny Sargent plays saxophone and is treasurer of the corporation. In spite of lingering depression the band is making as much as $2,750 a night.[1]

Kenny Sargent (left) and Pee Wee Hunt get up close and personal with the band's SR 80.

The mic is an Amperite SR 80 (New York City, New York). This was a studio, public address and recording microphone priced at $80.00. A call letter plate to sit atop the unit cost $7.00; It would hold a radio station's mic flag.

Amperite SR 80 from author's collection.

Amperite's SR 80 was available as a kit or assembled. Buyers chose a chrome or gun metal finish[2]. While not among the finest, technically, the SR 80's bold brute design is among the author's favorites.

REFERENCES

[1] *Radio Guide* for July 31, 1937, p. 10.

[2] Paquette, R. *The History and Evolution of The Microphone,* self-published, Milwaukee, WI, 1999, pp 207, 243, 322.

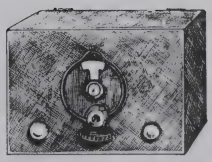
RECENT OBITS, *continued from page 55*

Oscar. She turned to acting to help her family survive when her father's business failed during the Depression. In 1932 she made her Broadway debut in *Whistling in the Dark* which was followed by a film contract from Fox to appear in *Life in the Raw*, a Western with George O'Brian. During her fifty-year film career she made sixty films. A sampling of them includes *Honky Tonk, Murder My Sweet; Hard, Fast and Beautiful* and *The High and Mighty*. Trevor made her television debut in "Alias Nora Hale" on NBC's *Ford Theater*. Other TV credits include "Dodsworth" on NBC's *Producers' Choice* and guest appearances on shows including NBC's *Doctor Kildare*.

RAYMOND WILMOTTE, 98, (1-22-00) communications engineer. In the early 1930s Wilmotte designed, installed and put into operation the first AM station directional antenna in Tampa, FL. During World War II he became a consultant to the U.S. military, working on direction-finding systems for airports and on radar and missile- interception technology. From 1959 to 1963, Wilmotte was employed by RCA on the development of a communications satellite, but returned to private consulting after Bell Laboratories moved ahead with the concept. In 1973 he joined the FCC as a full- time consultant. There he directed a UHF task force; was the principal author of *The Technical Boundaries of Television* and, most recently, consulted on digital communications, high-definition television and mobile communications.

Information for this column was obtained from *The Boston Globe, Broadcasting and Cable, The Complete Directory to Prime Time Network TV Shows 1946 -Present* (4th ed.), *The Hartford Courant, On the Air: The Encyclopedia of Old-Time Radio, The New York Times and Variety*.

Thanks to Andrew D. Gallatin, Frank Q. Newton, Jr., W6SYG; and Richard B. Waddell for additional source material.



2000 O.T. DX Contest Results

By Randy Haus, KB2PLW

Flash... Participation nearly doubles!

This year a total of thirty six stations participated in the April OT DX contest. Many of you wrote to express your enthusiasm for 1950s gear and the increased number of contest stations using equipment from that era provided a much needed shot-in-arm for the contest. The frequency windows seemed to be right on this time, with 40 meter activity centering on 7045 kHz and twenty meter activity centering on 14058 kHz. I believe that after three years of adjustments, we have finally hit the right combination of rules to make this contest a continuing success.

I anticipate that we will not be making many changes for the April, 2001 (sounds eerie doesn't it) contest. I can't help but wonder what AWA members will regard as Old Time Gear fifty or even one hundred years from now. Hopefully, people will always be able to hear the chirp of a '45 Hartley or other vintage rig during our AWA events. Our contests have become a sort of "museum on the air" for many new hams. I very rarely put my '27 TNT on the air without getting a small pile up and several requests for a schematic.

Congratulations to Bob Raide, W2ZM, who was high scorer with 432 points. Not only was the number of participants way up from last year, but the scores were generally higher, indicating a larger average number of successful contacts per station. Here is a breakdown of the scores:

Eastern Zone

Station	Points	TX	RX
WB1AJJ	177	1957 6V6	1959 Hallicrafters
KA1CFQ	12	1938 6L6	Mod
W1DDW	42	1940 6L6/807	Mod
W1GIG	12	1956 Elmac	1956 Hammarlund
W1FPZ	40	1938 46/TZ20/T55	Mod
W1MCG	100	1936 Homebrew	1937 Comet Pro
W1TSP	67	Mod QRP	Mod
N2CDD	72	1955 RT3	1959 R390A
KB2E	48	1958 CE-100V	1958 Collins
KX2H	1	Mod	Mod
K2KK	28	1955 Johnson Ranger	Mod
W2LYH	12	1955 6L6/807/811	1955 Homebrew
KE2O	14	Mod	Mod
KB2PLW	32	1938 6L6/Mod	Mod
W2VDI	342	1932 37/42 xtal	1938 Hammarlund
N2VO	42	1955 Heathkit	1953 Collins
W2YIK	12	1956 6146 Homebrew	1946 HRO
W2ZM	432	1941 6V6/45	1955 Collins 75A4
W5WS/3	90	1941 807	1939 Hallicrafters
AA4RM	24	1957 KWM-1	1957KWM-1
W4VBX	20	1958 32S1	Mod
K8JWR	30	1958 Heath DX-35	1958 Hammarlund
N9CQX	33	1956 E.F.Johnson	1955 Collins
N9TT	6	Mod	1937 BC312
AA9DH	180	1956 E.F.Johnson	1957 RME4350
VE3BHW	4	Mod	Mod
VE3DKW	162	1939 BC459A	1939 HRO

Western Zone

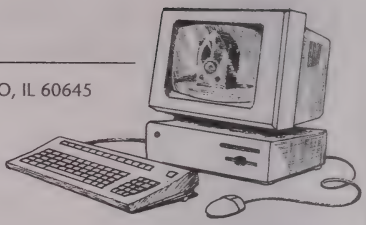
K5RB	40	Mod	Mod
K6KV	6	Mod	Mod
K6TQ	126	1938 6L6/807	1936 HRO
W8KGI/7	165	1952 Homebrew	1955 Collins 75A4
W7LNG	66	1955 Johnson	1959 Hammarlund
K7YIR	8	Mod	Mod
K2WW/7	18	Mod	Mod
W0OG	234	1939 Hallicrafters	1939 Hammarlund

DX Zone

J37XC	15	Mod	Mod

ON THE INTERNET

EDITED BY **CHUCK SCHWARK**, 7454 N. CAMPBELL AVE., CHICAGO, IL 60645
PLEASE INCLUDE SASE FOR REPLY. E-MAIL: caschwark@aol.com



More Web Wanderings

I've been doing some more surfing lately and have another small collection of places to see and some interesting statistics about our website, which celebrated its 1-year anniversary this past May. This list is an eclectic bunch of personal pages and those of organizations who have a web presence related to antique radio.

ARP Directory - Front
Alphabetical index of radios on the Web
1508 models listed; updated 10 Apr 99

INTERESTING SITES

The Antique Radio Page Directory
http://members.aol.com/djadamson5/ard/ard.html
Hosted by Don Adamson

This is an ambitious project: the goal is to provide you with a directory of antique radios from web sites around the world. The ARP Directory points you to web sites which have information about a radio of interest, saving you the trouble of plowing through hundreds of sites (some of which do not have an index). The ARP Directory is not a substitute for any site's own index; only older radios are listed here, and many sites have other interesting things listed in their indexes.

US Early Radio History
http://www.ipass.net/~whitetho/index.html
By Thomas H. White

Articles and extracts about early radio and related technologies, concentrating on the United States in the period from 1900 to 1927.

Tube Data Sheet Locator
http://www.duncanamps.com/tubedata/tubesearch.html
By Duncan Monroe

Need information on a particular tube or valve? This website can locate it! Also has provisions for you to contact the site owner to add unlisted types.

XYZ's of Analog and Digital Oscilloscopes
http://www.tek.com/Measurement/App_Notes/XYZs/index.html
By Tektronix Engineering Staff

If you are a scientist, engineer, technician, or electronics hobbyist, you should know how to use an oscilloscope. The concepts presented here provide you with a good starting point.

If you are using an oscilloscope for the first time, read this material to get a solid understanding of oscilloscope basics.

Lin Robertson's Old Time Radio Page
http://www.moonlightsys.com/otr/

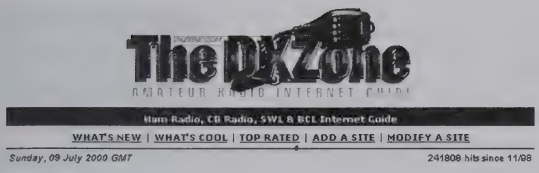
Welcome to the place where you don't have to be an old-timer to love old time radios! On these pages you'll find links to vintage radio resources, treatises on collecting, and much that relates to early radio history.

John Jenkins Vintage Radio Collection
http://www.halcyon.com/johnj/radios/

A very nice "virtual" museum displaying radios, early wireless, radio and scientific and electrical apparatus up to about 1925.

The DX Zone
Amateur Radio Internet Guide
http://www.dxzone.com/

The DXZone is an on-line only internet re-



source dedicated to Amateur Radio community, which includes Licensed HAM operators, Citizens Band Operators, Short Wave listeners, Broadcasting listeners and anyone may have interest on radio transmission and communications.

AWA WEBSITE REPORT

www.antiquewireless.org

The main thrust of the AWA website is to orient newcomers to the hobby and potential new members to our history, our member activities, and our goals. But keep in mind that—at this time—our newsletter, the *OTB* now in your hands, is the primary medium for communicating the detailed information you need to keep abreast of club activities and schedules. What you see on the AWA website is overview information designed specifically for the orientation of those who would like to get to know us better. This past May marks the one-year anniversary of the new AWA website. Since its remodeling at that time, we have maintained an average per day of 35 to 45 hits. This compares favorably with many antique radio related websites out there.

The *OTB* Online Edition and the Online Tours of the AWA main Museum and Annex continue to get 50 to 60 hits a week. We have received hits from every continent on the globe, except Antarctica! (I'm really waiting for that one!). The *OTB* Archive articles also receive a fair share of the overall *OTB* hit ratio. The Classified and Business Card Ads online are visited regularly as well, as is our new LINKS page—which is a very popular part of the website. This section is updated fairly regularly so check it out if you haven't lately.

During the past 12 months, our web logs show a varied and wide range of visitors. Whether the traffic comes from AWA members or interested parties browsing our site from their work computer systems or internet service providers, there seems to be a great deal of interest in antique radios and radio history. The examples below bear this out.

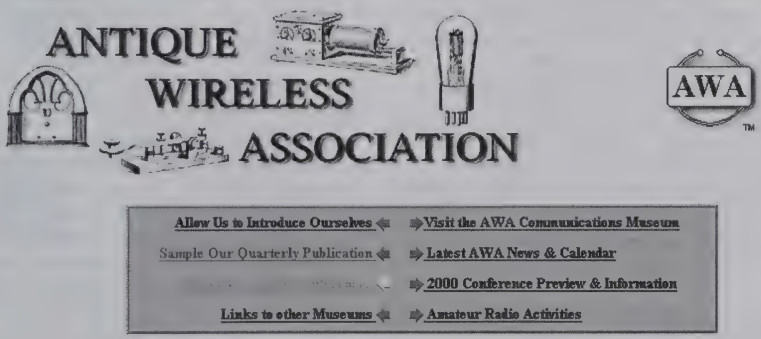
Companies: Xerox, Mayo Clinic, Tektronix, DuPont, Seimens, Hewlett Packard, Sony Semiconductor Div., Sun MicroSystems, Intel, 3COM, Lucent Technologies, IBM, Raytheon Corp., DeVry Technical Institute, Hitachi, Disney, Philips Corp., Allied Signal, Fairchild Semiconductor, Westinghouse Electric, Kodak, Lockheed-Martin.

Educational institutions: Univ. of Florida, Utah State, Purdue University, Michigan State, Northwestern Univ., University National de La Plata (Buenos Aires, Argentina), San Francisco State, Univ. of Missouri, Univ. of Hamburg, Univ. of Hawaii, Univ. of California at Berkeley.

Military: Beale Air Force Base, Peterson AFB (Cheyenne Mountain), Norfolk Naval installations, Picatinny Arsenal, NJ, Puget Sound Naval Shipyard, Naval Education & Training, NAS Pensacola, FL, Air Force Research Labs, US Marine Headquarters.

Government institutions: Veterans Admin., NOAA, Environmental Protection Agency, Kennedy Space Center (NASA), Langley Aeronautical Research Center (NASA), US Nuclear Regulatory Commission, Princeton Plasma Physics Labs, NJ (DOE).

All in all, the AWA website seems to have become a very popular one—word really gets around! See you next time.



About Our
Feature Article Authors

LARRY BABCOCK
Son of "Meet Report Extravaganza!"

Larry Babcock grew up in his dad's radio sales and service business, acting as a service tech and installing auto receivers while still in high school. After serving in the Infantry during World War II, he earned a BSEE degree at the University of Iowa and began a 37-year career at Bell aircraft.

At Bell, Larry headed programs to develop radar and air-to-air microwave relay links for the RACAL missile system and, later, to evaluate the Army's military electromagnetic interference problems. During his last years at Bell, Larry was in charge of the design of electromagnetic compatibility (EMC), TEMPEST, ordnance safety, radiation hazards and lighting immunity for all military equipment produced by the company. Later, he worked in these same fields as a consultant for other companies.

Larry began collecting antique radios in about 1973. He specializes in Federal, Wurlitzer, and WW1 aircraft sets, and has written a book on the history of Federal radio. He is on the AWA Board of directors and serves as a guide at the AWA Museum in Bloomfield.

JOHN CASALE, W2NI
Franklin L. Pope—Telegraphic and Electrical Engineer (Part 1)
(In "Key and Telegraph")

John's lifelong involvement in radio, telegraphy, and electronics began at age nine when his dad (a Signal Repairman for the Delaware and Hudson Railroad) gave him a telegraph sounder and key from a remodeled depot. He was first licensed as WN2FHL in 1968. John has served in the United States Army Signal Corps as a Television Technician, serviced consumer electronics and worked as a field computer technician. He is currently with Niagara Mohawk Power Corp, as a Communications Technician specializing in telemetry systems. He holds commercial FCC Radiotelegraph and Radiotelephone licenses, and is also a Senior CET (Certified Electronics Technician) certified in "Wireless" and a FAA Certified Instrument Flight Instructor.

A collector and restorer of landline instruments, he enjoys researching the history of the telegraph industry in the U.S., especially its roots in upstate New York.

WILLIAM B. FIZETTE, W2DGB
A Structured Approach to Fixing Up Those Nice Old Radios

Bill is AWA's current president and editor of *The OTB's* "The Communication Receiver" column. Read his full bio in the February issue (41-1).

FRANK J. LOTITO, K3DZ
A 1920'S Crystal-Controlled MOPA Xmtr

Frank has a BS in electrical engineering, but for most of his 30-plus working career has primarily done mechanical engineering from a quality point of view for a large international safety equipment company. He has held the call K3DZ for over 20 years, and also possesses an FCC General Phone license with radar endorsement.

He has been a home brew enthusiast from the start of his interest in amateur radio. His projects have run the gamut from modern solid state VHF and UHF FM synthesized transceivers to designs going back to the early 20s. Frank is most definitely a strong proponent of the "file to fit—fit to file" use whatever you have in your junk box school.

JAMES P. RYBACK, Ph.D., W0KSD
Boris Rozing: Electronic Television Visionary

James Rybak was born in Cleveland, Ohio in 1941. He has been interested in both radio and electronics, first as a hobby and then as a profession, for over 40 years. Jim holds B.S., M.S., and Ph.D. degrees in electrical engineering as well as Extra-Class amateur radio license W0KSD. He teaches engineering and mathematics at Mesa State College in Grand Junction, Colorado. In recent years, Rybak has published numerous articles in the U.S. and abroad on the history of both wireless and electrical technology. When not writing articles, he spends his free time trying to achieve "Worked All States" through the low- earth-orbit amateur radio satellites as well as trying to become knowledgeable about digital photography and slow-scan television.

LUDWELL SIBLEY
Tube Lore: "Make vs. Buy" at RCA

A telecommunications transmission engineer, Ludwell Sibley has had additional experience in moon-radar research, radio broadcasting, and commercial SSB point-to-point radio networks. He has edited a professional transmission textbook, edited/produced *The OTB* and *AWA Review* in years past, and written the electron-tube reference *Tube Lore*. Currently serving as tem-

(continued on page 62)

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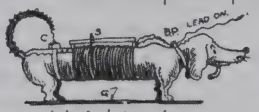

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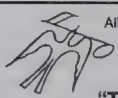

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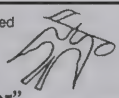

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ABOUT OUR AUTHORS, *continued from page 60*

porary custodian of the Dowd-AWA-RCA tube archive, he holds the Tyne Award for tube documentation and is editor of the Tube Collectors Association's new *Tube Collector* publication. An alumnus of the 532nd Signal Company, he is known to the Federal Government as KB2EVN.

WALTER H. SMARTT, M.D.
The AlSiMag Story

As a boy, Walter was obsessed by industry—roaming the Chattanooga area, where he grew up, pleading with local manufacturers for tours of their facilities. However, though his brother studied Ceramic Engineering, Walter became a doctor. Neither Smartt ever worked at American Lava (subject of the current article) except in summer jobs while at school.

Smartt graduated from VMI, taught physics there after graduation, and later graduated from University of Virginia in medicine. He was a flight surgeon for six years during the Korean War, winning an Air Medal for combat flights. After a 15-year career with the Los Angeles Health Department he retired in England, returned home in 1976 and started a general practice, then retired again.

Walter's boyhood interest in radio was piqued again when he discovered a mint Radiola 29 in a junk store in 1962. After finding enough '199s to make it work, he began picking up other early radio items—accumulating a good collection before the hobby really took off. He has a special interest in early vacuum tubes.

THE VACUUM TUBE

EDITED BY **LUDWELL A. SIBLEY**, 102 MCDONOUGH RD., GOLD HILL, OR 97525-9626

PLEASE INCLUDE SASE FOR REPLY.

Brother Pat Dowd—A Tough Act to Follow

It is appropriate to open this column with a bit of tribute to Brother Patrick Dowd, FSC, W2GK, who edited this part of *The OTB* for 19 years. He had taken over from Gerry Tyne upon the latter's death in 1981. Dowd is one of the three individuals who have most advanced tube history and preservation for our generation, the others being Tyne and John Stokes.

Brother Pat (center) shows Bruce Kelley (now deceased), AWA museum curator, around his museum. Beaming gentleman at right is Rick Barry, Manhattan College's Engineering Librarian. Photo about 1989.

Bro. Dowd's contributions have been both literary and material. As for literature: Over a span of 20+ years, he contacted former members of RCA's tube division like George Rose and Paul Weimer, "interviewing the survivors" while they were still available. This led to a unique and detailed history of GE's and RCA's development of the metal receiving tube, first printed in *The OTB* in 1976-77 and reprinted in the June 1992 anthology issue. His 1977 paper on deciphering date codes on early RCA tubes remains available and is a great help in dating receivers that contain these tubes. His biography of early inventor Fritz Lowenstein (AWA Review, Vol. 9) gives insight into early radio/wireless development. The Dowd list of brand names of 201A tubes is now up to 628 entries. All this, on top of a long line of articles in this column!

In a more material way, the tube museum that he built up, housed at Manhattan College in New York City, is a superb exhibit of tube history that has been written up warmly in *CQ*, *Popular Electronics*, *The OTB*, and similar sources. It is certainly the best quasi-public tube museum, with long operating hours year-round, in the country. The descriptive catalog for this museum, issued privately in 1997 and published last year by the Tube Collectors Association, is more than a listing of displays; it contain s an original history of RCA's developments in the area of TV camera tubes and related types.

As another material contribution, Bro. Dowd was responsible for rescuing the production files when RCA closed its Harrison receiving-tube plant in 1976. This treasure, now owned by the AWA Museum, has lately been taken from storage. Now stabilized, labeled, and catalogued, the Dowd-RCA Archive is available for research use. It comprises 160 shelf-feet of ma terial on the production and marketing of tubes, with a 45-year time span.

Bro. Dowd is well respected in the tube-history community. He was the first recipient of the Tyne Award (1980) and holds the AWA Houck Award for Preservation. He is a Fellow of the Radio Club of America and has received their Ralph Batcher Award. A teacher and school principal for 50 years, W2GK is also a DX heavy-hitter and past president of the North Jersey DX Association.

I'm honored to serve in Bro. Dowd's place. For details on availability of the Manhattan College museum catalog, for a copy of this year's status report on the Dowd-RCA Archive as provided to the AWA Museum trustees, or to visit the Archive, you are welcome to contact me by phone (541-855-5207) or e-mail (tubelore@internetcds.com).

(continued on page 68)

BY LUDWELL SIBLEY

TUBE LORE: "MAKE VS. BUY" AT RCA

PART 1

As someone interested in the history of the tube industry, I've always been tantalized at the idea that many tubes sold by a given supplier were actually made by another company. It is well known that the tube makers wholesaled tubes, and tube parts, to each other. There have even been hints that military-surplus tubes found their way into the civilian market under major brand names after World War II. But details are lacking. The presence of a tube in data handbooks like RCA's HB-3 or RC-series gives no clue as to the origin of that type.

However, new information is available in the AWA Museum's Dowd-RCA Archive. (See my column "The Vacuum Tube" in this issue). In that material is a series of product-management binders that give a good view of the company's practices regarding to buying tubes and tube components from the other makers. The following may shed some light in this area.

First, it will be helpful to cover some basics of the tube business, which was highly "differentiated" in marketing terms. As seen by RCA, the market had the following major components.

- The Original Equipment Manufacturer (OEM) market. This comprised set makers (Emerson, Motorola, etc.) and included the RCA Victor (Home Instruments) division. Tubes sold in this area were generally custom-branded with the buyer's identification and bulk-packed in units of 100.

- The Other Tube Manufacturer (OTM) market. All tube makers had the same need as RCA to maximize production efficiency. Some of them, like Westinghouse, had substantially broader product lines which are known to have involved purchased tubes. Tubes with the familiar octagonal etch and "U.S.A." in RCA- style lettering certainly appeared under a wide variety of brand names.

- The renewal market. This was effectively divided into the Distributor (general) area, in which RCA-branded tubes were sold in either the familiar red-white-black box or the white "industrial" box; the "Brand Marketer" area, in which tubes were branded and packaged to meet specifications of the buyer (Sears Silvertone, Ward's Airline, W.T. Grant, etc.); and the Private Brand Renewal (PBR) area.

RCA tubes are known to have appeared under about 250 (!) private brands. Of course, RCA had maintained its own PBR brands: "Cunningham" for the general radio-service trade up through the '30s, and "RCA Victor" for Victor dealers much later.

- The Government market. This was mainly the military area, in which tubes were usually high-reliability or ruggedized types with "WA-" or "Y-" suffixed type numbers, were bought largely via contract bids, and had to meet an ever-changing variety of MIL Specifications. Custom-branded high-reliability tubes also went to agencies like the Federal Aviation Administration.

- The export ("International") market. This was mostly commercial business, but included private-branding for the China National Aviation Corporation of "Flying Tigers" fame, and the Government of Iran.

- Miscellaneous sales to other internal units, as with transmitting tubes sold to RCA Communications, RCA Radiomarine, or RCA Victor's broadcast-equipment division.

Sales to equipment makers were in big blocks, often running 100,000 tubes per year of a given type. A big runner was the "miniature All-American Five" line of AC-DC radio types (50C5, 35W4, 12BE6, 12BA6, 12AV6); RCA sold roughly 1.5 million of each a year at the peak.

Sales to the OEM market were crucial to at-

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taining big volumes, and thus justifying manufacture. A volume of 50,000 tubes a year was considered low. However, in a given year the equipment makers bought a relatively limited range of types, mostly new arrivals or proven high-runners.

The renewal market was more tricky, with its requirement to supply a huge spectrum of types, most of which were obsolete. An illustration of the diversity needed here comes from counting up the renewal product lines of several brands as of 1960 (this, from a radio-TV servicing source, Dave Rice's *Official Pricing Digest*, Vol. 4 No. 1). The numbers of types offered by each seller, in terms of receiving and small special-purpose tubes, ran as follows:

Westinghouse	992
Raytheon	791
Sylvania	660
General Electric	607
RCA	604
Tung-Sol	593
CBS	524

RCA, although a giant in the industry, was content to keep its product line modest in size. It would be unrealistic to assume that each seller made such a bewildering variety of products. The decision to make or buy for this market naturally depended on expected sales.

In RCA's case, many of the types in the distributor and PBR markets sold at 2500 to 18,000 units a year; some ran as low as 50. Occasionally a low-runner type had to be made on an emergency basis, as happened in 1946 when Sylvania couldn't supply 50Y6GTs.

RCA accompanied make-or-buy decisions with shifting of production responsibility among its receiving-tube plants. Cincinnati made all-glass types; Indianapolis and Woodbridge (NJ) made mainly TV types; while Harrison produced metal types, Nuvistors, traveling-wave tubes, and "everything" else.

The Lancaster (PA) plant was responsible mainly for transmitting and camera types, photomultipliers, and CRTs; but produced some metal types in WW II and, after the war, made a few receiving types like 50s, 81s, 6BD4As, and 6BG6Gs.

For any maker, purchasing a new type naturally provided a low-risk way to measure the demand. If sales were high enough, that type could be scheduled for manufacture at lower cost than buying it. For an obsolete type, purchasing released manufacturing capacity for newer types.

RCA usually offered its purchased types to only the distributor and PBR markets. (There were occasional exceptions like the 1L6, which was bought for resale also to RCA Victor.) If a previously purchased type went into production, RCA opened up sales to OEMs and other tube makers.

Occasionally a given tube would appear in RCA warehouses as both purchased and manufactured stock. In that case, the practice was to ship only RCA-made product to equipment manufacturers and OTMs—perhaps because of the relative difficulty of adjusting quality problems on tubes made by a third party.

The use of purchased parts often eased the production of a new type until RCA-made tooling was available. The initial parts sources for some RCA-made tubes were: Sylvania, for 5AM8, 6AM8, and 6AW8; Tung-Sol, for 12AX4GT; GE, for 6BF11 and 12CA5. The 12BY7 was originally purchased from Hytron, then made with Tung-Sol parts, then produced with RCA parts.

Components for a given tube could come from multiple sources. For example, RCA's 12K5 used plate-halves from a firm called Microstamping, cathode sleeves from Precision Electric (GE), mica spacers from Tung-Sol, and the rest from RCA itself.

One consequence of buying tubes for which the demand was dying was that, when the maker discontinued production, RCA's offering would disappear when warehouse stocks were used up. An example is the venerable 45, which RCA was buying from Sylvania as of 1955. RCA's sales of 45s were running about 10,000 tubes a year. When Sylvania abandoned this type in 1957, RCA had to do the same. (Ah, if we could find 10,000 new 45s today!)

As a more involved example, RCA's 5GX7 was purchased. Discontinued when the original source gave it up, it was reinstated when a new supplier appeared. Some tube types were selected from stocks of another type; when the base type disappeared, the selection naturally did also.

Occasionally RCA would buy a whole family of related types. This was true of the mobile-radio types in the 6660-6686 line, which came from GE.

Sometimes a type was purchased just to avoid

a perceived gap in the line. This was true of the 5Y3G, which had become obsolete when the 5Y3GT appeared. However, some radio repairmen insisted on having the "G" version, so RCA began buying this type in 1948 at about 5000 per year because GE and Sylvania still offered it.

The ultimate conversion of tubes to "purchased" status came with the closing of the Harrison plant. While Lancaster continued with its special products much later, RCA reverted to its pre-1930 role as seller of mass-market receiving tubes made by others. "Others" included such foreign sources as RCA plants in Mexico (for the 6AU6A, 6BA6, 6CB6A, 6FQ7, 12BA6, and 7543) and Brazil (for the 6AW8A, 6EA8, 6GH8A, 6LF8, 6LN8, 12FQ7, and 50C5).

It may be helpful to cover how tubes were marked. Generally, the factory (RCA's or anyone's) put on the basic type number on the bulb in a durable "etch" marking that was heat-activated. (RCA's etch had a month and year of manufacture encrypted into it via a tiny break in the octagon surrounding the type number.) Then tubes were sent in bulk to the warehouse for ink-stamping with a trade name on the bulb or base.

Tubes intended for the distributor market (but not usually for OEM sale) often carried auxiliary type numbers. For example, a certain TV damper tube would be factory-etched "6CG3" and then warehouse-branded "6CG3/6CE3/6CD3/6BW3." The warehouse also performed special selection tests (a whole topic in itself!), date-coding to indicate the month of shipment, and packing for shipment.

Going through the RCA product binders, it is possible to identify 262 types that were purchased, 82 that were converted from purchased to manufactured status, and another 13 that went from manufactured to purchased. This, again, is from a constantly varying product line of about 600 types.

Some examples, in terms of types most familiar to radio restorers, are as follows:

Purchased:

1A4P	6AQ8	12DW7
1B4	6B5	25AC5GT
1B7	6B7S	32L7GT
1G5G	6DJ8	50Y7GT
1J5G	6N6G	70L7GT
1P5GT	6R7GT	117L7/M7GT

Purchased, later made:

0B2	6BL7GT	6U8
0Z4	6BN6	12AV7
1X2	6BQ5	12AY7
6AB4	6BU8	12AZ7
6AH6	6BX7GT	14GT8
6BJ6	6EA7	19T8

Made, later purchased:

1C5GT	1S4	75
1DN5	6BZ6	5844

Made and simultaneously purchased:

1C6	6BQ7	6JT8

It is often possible to identify the source of an RCA-purchased type from the Dowd-RCA binders. Amperex supplied 6922s. GE furnished the 1A6, 1C6, 6T8, 19BG6G, and 8156. Hytron provided 6K5GTs and some 6BQ6GTs. National Union made RCA's 5W4GTs (after 1952); its 12K7GTs; and some 12SN7GTs, 25L6GTs, and 35L6GTs.

Raytheon was the source of the 2A4G, 3A8GT, and 6AN5. Sylvania supplied the 1E7GT, 1J6GT, 6SR7GT, 5642, and (after WW II) 6A3 and 6J8G. Tung-Sol was the origin of RCA's 6S8GT, 12S8GT, and 117Z4GT; some 50L6GTs; and (after WW II) 6P5GT and 6SD7GT. Government surplus stocks, ca. 1946-48, were the source of the 6AK5, 6K8G, 6V6G, 10Y, and 89Y—at least until the 6AK5s were gone.

Part 2 (conclusion) of this article will appear in the November OTB.

SILENT KEYS

We record the passing of the following AWA members with deep regret.

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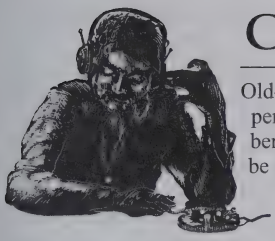

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Zenith 12HQ-090 console radio AM/FM (45 and 88 MHz bands) and shortwave. Was purchased in 1948 and can be seen in several movies of that era. Warren Laufer, K2FG, 230 Warren Ave., Kenmore, NY 14217 (716) 876-2475

Riders RCA Cunningham Perpetual Troubleshooters manual, 1921-1930 radio schematics,

2767 pages, $125; instructions and diagrams for Tech-Master kit TV, $15; audio discs, blank record discs, $3. each; auto radio vibrators, $5 each; large TV shop manuals, Emerson, Westinghouse, Dumont, GE, Stromberg-Carlson, 1946-1954, $10. each; 10" × 13" TV magnifier, $20; 2" and 3" electrostatic CRTs, 12 assorted for $85; Admiral TV-Radio store window decal, large, unused, $25; literature collection, SASE for large list. Bill Rolf, 30131 Center Ridge, Westlake, OH 44145 (440) 871-4547

Old medical apparatus which produces electrical sparks. Includes high voltage transformer, spark gap, oscillation coil, condenser, meter. Also equipment which produce variable voltages which includes induction coil with variable permeability. Best offer for each one. Argirios L. Adamidis, Kampouridi 19, Panorama, Thessaloniki, Greece 55236 E-mail: aadam@it. Teithe.gr Tel. (031) 342 405

Victor RE-75 and other combos and radios which I must move. Lists supplied upon request. Visitors to my museum are welcome. Malcolm D. Burdick, W1NOO, 156 Station Rd, Hampton, CT o6247 (860) 455-9640 before 8:30 P.M.

Trade from following, +/- cash, for original Zenith Model 835 chrome-front tombstone; Emerson BT 245 catalin, butterscotch/maroon, no cracks, original cardboard back; A-K "homebrew" breadboard, style 3945, probably 1922, pre-factory assembled; ARIA catalin, butterscotch/orange, identical to Dewald 561, with bottom cracks, with back; Detrola 4D1 mini-cathedral; RCA 143 (mint); AK 84 cathedral (near mint); Grunow 1291 Teledial; Zenith 12A58 chassis, speakers, parts; Emerson 414 "Wheat" repwood; Zenith 8S463 (mint); Scott 160 chassis (2), pitted, w/o speaker. Thanks. Chris Hicks, 57 Jameson Hill Road, Clinton Corners, NY 12514 (914) 266-4257

Estate sale: Complete Johnson station including 2000, KW Matchbox, TR switch. Also NC-303, SX-25, B&W 6100, Morrow MB6 Rcvr/MB565 Xmtr with 120V. & 12V. power supplies. Much more! I can bring items to Rochester in September. Tim Walker, W1GIG, 19 Woodside Ave., Westport, CT 06880 (203) 454-4376

ARRL Handbooks, 1967 mint, $12; 1972 in excellent condition, $10; 1959 good cond, $8; Manuals by Wm. T. Orr, W6SAI: Quad antennas, 1959, $5; VHF Handbook, 1956, $6; RCA RC-19 1959 Tube Manual, v.g., $7. Also have power transformers and filter chokes salvaged from junk boxes from the 40s. All of above plus shipping. Onerio Sabetto, W8PIU, 1717 Burgess Rd.,

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***VACUUM TUBE**, continued from page 63*

New Book

Keith Thrower is well known to tube-history enthusiasts via his *History of the British Radio Valve to 1940*. Now he has a new book out, *British Radio Valves – The Vintage Years: 1904-1925*. This is a rather satisfying work, carefully illustrated. It is based on not just early research sources, but on examining actual tubes in the McVitie Weston Collection of the British Science Museum. It covers British tubes from the Fleming Valve through the developments of WW I and the commercial products of the mid-Twenties. Military types, silica valves, Post Office types, transmitting tubes, tube-base designs, histories of manufacturers—they're all in there, thoroughly and enjoyably documented. The book, ISBN 0 9537166 0 0, is softbound. It has 148 pages in approximately 7" × 10" format, with 100 illustrations and extensive tables. It's available from Antique Electronic Supply and other dealers for $32.95.

Rochester!

The antique-radio world is ramping-up for this year's Rochester event. We expect to have fun in the Tube Collector's Association-sponsored tube session, with Jim Cross explaining the early history of Hygrade Sylvania. Your editor will cover today's tube industry, which is as diverse as ever but has evolved in unexpected ways. Noted Australian tube collector and author Fin Stewart will describe tube collecting "Down Under." A separate tube auction, like last year's, should be entertaining and productive…at prices more affordable than on eBay. And the separate category for tubes in the Equipment Contest allows proper coverage of this fundamental element of tube history. See you there!

Cleveland, OH 44112-1103 (216) 481-1036

Set of 5 Victoreen Superhet coils, $35; 3 tube National Thrillbox receiver, $400; RCA B-411 portable radio (4 miniature tubes), $300; Western Electric 371B tube new in box, $20; Grebe CR-9 parts (most of set), $175. Walt Sanders, 15 Todd Dr., Terre Haute, IN 47803 (812) 877-2643

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100 watt stereo system mounted in a Barzilay oiled walnut three-piece cabinet, Model 80E. It consists of a 4 ft. long console and two 2 ft. speaker cabinets all enclosed by tambour doors and a horizontal top-lift door on the equipment console. Inside has H. H. Scott 296 integrated dynaural laboratory amplifier, Fisher 200B FM tuner, Collaro RC-440 turntable/changer. Also has 50 factory recorded stereo tapes (7½) and 200+ LP records of 1950s and 1960s and some classical records. Speaker cabinets are bass reflex for 15" woofers and 10" conversion adapters. A Roberts 997 tape deck sits on top. SASE for full details. Francis H. Yonker, 1229 Inverary Place, State College, PA 16801 (814) 867-1400

SELL/TRADE—KEY & TELEGRAPH

J5 1918 flameproof key; 1926Vibroplex (New York) with cord, case and instructions; Western Electric CW 834 headphones. Robert Gleason, W3KW, 3734 Ramsgate Drive, Annapolis, MD 21403

SELL/TRADE—LITERATURE

Library bound (book bindings) QSTs July 1919 to Dec. 1929, bids. 1950 to 1959, $250. 1960 to 1969, $200. All very good condition. Mike Grimes, K5MLG, 3805 Appomattox Circle, Plano, TX 75023 (972) 867-6373 E-mail: grimesm@flash.net

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One-of-a-kind magazine collection (1919-1940). The following magazines are included: Los Angeles titles are Radio Doings, Radio Journal, and Technician. General coverage titles are Radio Retailer and Jobber, Radio News Radio Broadcast, Radio Industries (rare), Radio Call Books, Radio, QST (limited supply), Patent Indexes (books) and at least 20 other magazines (limited quantities). Over 1400 magazine issues, about 20 ft. of width. $8,750. (about $6 per issue). Send SASE for a somewhat detailed description of magazines by month and year. Floyd A. Paul, 1545 Raymond Ave., Glendale, CA 91201 (818) 242-8961

Sams Photofacts. Numbers 1 through 600 in binders. Housed in four 4-drawer file cabinets. Best offer. Fran Thisse, 164 Washington St., Manlius, NY 13104

1928-43 European radio schematics, more than 1300 pages, $85. plus shipping. Argirios L. Adamidis, Kampouridi 19, Panorama, Thessaloniki, Greece 55236 E-mail: aadam@it.teithe.gr Tel. (031) 342 405

Canadian Antique Radio Schematics - Do you need a schematic for a 1924-1967 Canadian made tube radio? If so please advise of make & model. $5. per schematic to Dave Cantelon, 42 Clematis Rd., North York, Ontario, Canada E-mail: justradios@yahoo.com WEB site http://www.geocities.com/justradios/

Radio schematics & Service Data, U. S. & Canadian receivers: 1920s to 1960s. Include #10 SASE plus $2.50 for one to five pages of data per model. Over 5 pages, 20 cents per page. Steve Rosenfeld, P.O. Box 387, Ocean Gate, NJ 08740 (609) 597-2201 E-mail: srosenfeld@ems.att.com

SELL/TRADE—PARTS

Have thousands of 1920-40s radio parts and tubes now listed on my web site: Gary Schneider, 9511 Sunrise Blvd., #J-23, North Royalton, OH 44133 E-mail: Oldradioparts.com

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RCA Model UP-1016 power transformer. Filament windings have been removed, but transformer could be restored to its original condition. No rust, $40. plus shipping 30 lbs. RCA Model UP-1627 filter reactor. Intact, $30. plus shipping. 18 lbs. David Stout, 439 21st St., Santa Monica, CA 90402 (310) 393-4104 E-mail: damarst@prodigy.net

SELL/TRADE—TUBES & TRANSISTORS

Voltage regulator tubes for your Borgia II. UX base, with side pin for twist-lock bayonet base; RCA 874, NOS (reboxed) shoulder style, 6 available for $35. ppd. USA. Jim Farago, 4017 42nd

Ave. South, Minneapolis, MN 55406-3528 (612) 722-0708

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2 and 3 digit pre-octal radio tubes. Catalog available. George H. Fathauer, 688 W. First St., Ste. 4, Tempe, AZ 85281 Ph. (480) 968-7686 Fax (480) 921-9957

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75 year transmitting tube collection. Over 150 types, many duplicates. Sockets for most types. RCA, W.E., GE, West., EIMAC, Taylor, RK, HY, CE and H&K. Sell as complete collection only, where-is, as-is in North Carolina for $2,500. Complete list available to serious inquiries. Harry Mills, K4HU, 631 4th Ave., W., Hendersonville, NC 28739 E-mail: millsjr@bigfoot.com

SELL/TRADE—TRANSISTOR/CRYSTAL SETS

Galena crystals, radios and crystal set parts. Len Gardner, 458 Two Mile Creek Rd., Tonawanda, NY 14150 (716) 873-0447

WANTED—BC/SW TUBE RADIOS

Racal RA-17 receiver, any model, in repairable condition. Have telegraph items (early blue racer, British Marconi key, and others) to trade. Rick Ferranti, WA6NCX, 1341 Cedar St., San Carlos, CA 94070-4755 Tel. (650) 859-2857 E-mail: remler@juno.com

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Arvin 517 tombstone in any condition. See Stein, Vol. 1 for picture. Patrick Franzis 235 Millville Ave., Namgatuck, CT 06770 (203) 723-8976 E-mail: old_radios@yahoo.com

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RME-69 and RME-6900 in any condition. James Shank, W3CNS, 21 Terrace Lane, Elizabethtown, PA 17022 (717) 367-3149

Excellent original working Pla-Pal "Penthouse", Wilcox-Gay A-17 and Stewart-Warner R-192 "Good Companion" radios. Joseph Di Caro, 4155 Lastrada Hts., Mississauga, Ontario, Canada, L5C 3V1 (905) 848-7759 E-mail: joedidcaro@excite.com

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Want to buy Stromberg-Carlson table radio, Model 1121, circa 1946, non-operating is OK. Charles Harper, 2000 Jackstown Road, Paris, KY 40361 (859) 484-9393 E-mail: charper@kyk.net

WANTED—COMMUNICATIONS GEAR

HQ-120 parts set; coil sets other than A-D for HRO-60—especially AA and AC. Can pick up at Elgin or Rochester. Marc Ellis, PO Box 1306, Evanston, IL 1306-60204; 847-860-5016; mfellis@enteract.com

WANTED—GENERAL

Disc recording lathe (over-head only) for 16 inch turntable, or 12 inch with turntable. With or without recording head. Charles Graham, 4 Fieldwood Drive, Bedford Hills, NY 10507 (914) 666-4523

An original or tracing of the back for an Emerson EAP-375 (5+1). Herman Gross, 1705 Gordon Drive, Kokomo, IN46902 E-mail: w9itt@mindspring.com

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Want Brush Model BK-401 tape recorder made in the late 1940s. Also looking for a Presto Model K-11 disc recorder. Gaylord Ewing, P.O. Box 144, Morris, NY 13808

GE X-371, X-372, Hallicrafters CR-3000, Ten-Tec 315, RX-10, Mosley CM-1, Heathkit AR-3, American Bosch 440T cabinet. Herman Schnur, 3205 Brick Kiln Rd., Greenville, NC 27858 (252) 752-2264

Antique quack medical, scientific devices, especially violetrays. Also open frame motors and fans. Richard Cane, 1333 N. W. 127th Drive, Sunrise, FL 33323 (954) 846-7116 E-mail: rbcane@sprynet.com

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Cabinet for Western Auto Truetone Model D-698. Jim Ligouri, 7 Sycamore Court, Atkinson, HN 03811 (603) 362-5712 E-mail: Jjligouri@aol.com

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Stromberg-Carlson 523 or 524 8 tube chassis and 403AA power unit, built in 1927. Crosley brown plastic knob for Model 66TA, part # W-130197. David Kaiser, 375 Yarmouth Rd., Rochester, NY 14610 (716) 654-6604 (by non-member) I am going to school to learn how to maintain and repair tube TVs, and am looking for an individual to tutor me in this field . Please contact Raymond La Pointe, 10 Alfred St., E. Wareham, MA 02538 Tel. (508) 273-0102

Philips-Norelco "AM-FM Deluxe" multiband with transformer instruction booklet (and booklet alone), aligned and working; also want 67 1/2 VDC battery eliminators from the 30s to 50s, such as Maxell, Lafayette or Radio Shack; White's Radio Logs; additionally want good working, aligned Motorola "Playmate Junior" 5A5 (tube type). Thank you. Al Sherry, P.O. Box 1051, Riverdale, NY 10471

WANTED—INFORMATION

Want to correspond with someone who has an early Clapp-Eastham item with Boston tag (rather than Cambridge). I need a good, sharp photo from which to make a tag. Will gladly pay costs incurred. Ed Bell, 5311 Woodsdale Rd., Raleigh, NC 27606 E-mail: ekbell@mindspring.com

WANTED—KEY & TELEGRAPH

Unusual Speed Keys (Bugs) from obscure manufacturers or unusual configurations such as left-handed, right angle, vertical or over and under types. I will be showing slides of my bugs at the Conference so please attend and bring along a "wierdo" for me to identify. Gil Schlehman, 335 Indianapolis, Downers Grove, IL 60515 (630) 968-2320

WANTED—LITERATURE

Manual or schematic for 1939 Sargent Streamliner receiver. Harry Blesy, N9CQX, 9S740 Clarendon Hills Road, Hinsdale, IL 60521 (630) 789-1793

Need schematics, alignment and operating instructions for Technical Material Corp. (TMC) SBE 2 communications console made during the mid 50's for the following: 1516 exciter, 1397 Power Supply, MSR 1 receiver mode selector. Greg Teufel, K7VHV, 11708 125th Ave. NE, Lake Stevens, WA 98258 (360) 658-1500 E-mail: belleterrier@compuserve.com

Radio amateur magazines 1939 to 1950 from England, Australia and Canada. Alan Mark, P.O. Box 372, Pembroke, MA 02359

Whole collection of back issues of AWA *Old Timer's Bulletin*. Harry Blesy, N9CQX, 9S740 Clarendon Hills Road, Hinsdale, IL 60521 (630) 789-1793

WANTED—MILITARY

Have receivers from each country involved in WWII except Russia, Italy and France. Will trade US receivers, a German Torn Eb or pay cash. Charlie Newcomer, 106 Central Manor Rd., Mountville, PA 17554

WWII R-44/ARR-5 3 band VHF receiver by Hallicrafters or Hallicrafters S-27 or S-36. Strong preference for unmodified, complete receivers; R-28/ARC-5 WWII aircraft VHF receiver; Technical Manuals or reprints for above. Charles W. Rhodes, 10105 Howell Drive, Upper Marlboro, MD 20774 phone (301) 574-0214 fax (301) 574-1978 E-mail: charleswrhodes@worldnet.att.net

WANTED—PARTS

Blank breadboard for AK-5. Edwin Schmidt, 9723 Carter Dr., Overland Park, KS 66212

Desperately seeking an escutcheon for 1933 Stewart Warner R-1251-A, pictured on page 191 of Machine Age to Jet Age Volume One. This escutcheon was also used on a number of other S-W sets of this period. Maybe you have one? I will mail you a photocopy of the picture and a tracing of the escutcheon opening if it would help you. Bret Menassa, 580 Jefferson Drive, #112, Deerfield Beach, FL 33442 Phone (954) 480-9510 or E-mail: bmenassa@worldnet.att.net

Band Selector Knob and AC cord for Zenith Royal 7000. Robert Rossi, 10936 Melbourne St., Allen Park, MI 48101 (313) 386-8321

Major components to construct a 200 watt Ham Transmitter. I need: power transformer to provide 1000 volts DC at 300 mA, swinging choke, 300 mA, transmitting tuning condenser, split stator rated for at least 2500 volts, 1500 volt filter capacitors, driver transformer, pair 2A3 to class B 211 modulator tubes and 813 tubes. Charlie Rhodes, 10105 Howell Drive, Upper Marlboro, MD 20774 (301) 574-0214 fax (301) 574-1978 E-mail: charleswrhodes@worldnet.att.net

Looking for a Model 20A Philco parts set. Also looking for a Philco Model 80 parts set. James Maloney, 1703 Leno Rd., Macedon, NY 14502

MUSEUM, continued from page 76

structing a new museum building on the property we own adjacent to the annex. The first study was to determine the type of septic system required. The news is not good. The land just doesn't "perk" and we're faced with a much more expensive elevated system. And you thought we played with old radios all the time!

Actually, we would like to work with the artifacts more but there isn't room. Guys are working on conference tables, desks and everything but proper work stations. That is changing as the northwest corner of the current library is being torn out to be replaced with proper work benches having good test equipment and tools. Those volunteering to work on your museum deserve a proper and safe place to work.

Soon to be announced is a wonderful research tool for those wanting to search for information in past AWA publications such as *The Old Timers Bulletin* and the *AWA Reviews*. A complete index of these, in either of several computer searchable formats, or in a bound paper edition, will soon be available for little or even no cost when purchasing AWA publications. Look for the CD editions, too! Lots of exciting things happening here at the AWA.

For your museum crew, S'long everybody. See you in September.

Ed Gable K2MP/W2AN
Curator/Director, AWA Museum

RECENT MUSEUM DONORS

Debbra Allwell
Large collection 1930/40s receivers given in memory of AWA member Stephen W. Allwell

Don Dunn
Zenith Console radio

Gaylord Ewing
Swan 350 Xcvr w/PS

Paul Feldman
Book "Setmakers" History U.K. radio/TV manufacturing

Dick Fish W2OWF
Hickok 51X tube tester, Dumont 208 Scope, tubes, more

Ed Gable K2MP
Unusual side mount telephone, S-C, 30s; 6,000 common radio/TV & TX tubes; Oak crank type telephone

Earle Hickey
Qnty 33 TX tubes, two Midwest chassis, 1951 Crosley TV

Tom Hoosac
RCA 100A Speaker

Bill King
Receiver using Remler panels

Frank Merrill
Peerless and RCA 103 speakers, Radiola 18

Robert T. Millard
Book, "The Collectors Vacuum Tube Handbook," author's proof copy

Richmond Millham
Heath HW-99 w/accessories

Gary Morse
250 radio tubes

Bob Moore, N2USB
Sonar VXF-680 TX, Teletypewriter

Frank Patti
Service literature, documentation

Thomas Peterson
McElroy Inker, Hertz Resonator, much more

Goyne Reinhardt W2AF
B&W LPA-1 Linear, 20s 3 dialer, more

Steve Reynolds
Collection Ham radio awards and photos, 1930s

Karl Stilson
150 radio/TV tubes

OTB Back Issues

The following back issues of *The Old Timer's Bulletin* are available at $3.00 each postpaid, with a 20 percent discount for six or more issues and 30 percent off for 12 or more. Index to *OTB* volumes 20-34 and *The AWA Review* Volumes 1-8 is free on request with purchase. Please indicate alternative choices when ordering back issues of *OTB*.

—VOLUME AND NUMBER —

25-4 Comet Pro/4-tube superhets/20s tuner
26-1 Cockaday Rcvr/Silver-Marshall/'29 Hartley XMTR
26-2 TTY Perforator/FB7 Receiver/McElroy Championship
26-3 Nation FB7 II/Radio in S. Africa/Mercury Super 10/ Building a 1929 Receiver
26-4 Gilfillan History I/ Sargent Model 11 Receiver
27-1 Gilfillan History II/Schickerling Tubes
28-1 Dynergy AC-Powered Radio/Pilot TC37 TV
28-2 '26 Radiomovies Today/National AGS I
28-3 Dowd Tube Collection/National AGS II
28-4 SE-1950 Radio Compass/National Sliding-Coil Receivers/Collecting Radio Batteries
29-1 Philco 17 Restoration/ZL2JJ '34 Station
29-2 Fada 460 Restoration/3ZO 1922 Station
29-3 Moorhead Tubes I/British '30s TV I
29-4 Moorhead tubes II/British '30s TV II
30-1 GE Octagon TV Set/TR-1 Transistor Clones
30-3 Military Equipment Special-17 pgs. of 48
30-4 Broadcast Receiver Special-12 pgs. of 48
31-1 1903 Ship Station/Spark vs ARC 1912/KWM1
31-2 Minimax/Spkr&Magazine Restoration/ Pushbutton Sets
31-3 Tube Special-19 pgs. of 48
31-4 International Special-11 pgs. of 48
32-1 Early SSB eqpt/AR188/BC-375/1915 Ship Spark XMTR
32-2 Restore 67.5 V Bats/A&B Pwr Sply/WWI Navy Equip.
32-4 Marconi V-24 Valve/HRO in British Army
33-4 Scott Special Rcvr/National Power Units
34-1 British crystal Sets/National Power Units
34-3 International Special II-20 pgs. of 64
34-4 Bell Labs Transistor Set/"Larkspur" Radios
35-1 Radiola and Aerola Grand/German WWII Magnetrons & Avionics/Tech-Manual Art
35-2 Van Horne Tube Co./Philco TV Designers/Foreign "HROs"/1200- and 1600-series tubes
35-3 Radiola 17 and 18/1929 regen/G&R Valve Co.
35-4 Negatron/Mercury Super 10/The Breting 14/James Millen Memorial Station
36-1 Orrin Dunlap's Lab/Kolster K23/Bush & Lane Radio
36-2 Headset Update Listing
36-3 100 Years of Marconi Radio
36-4 History of Rogers Batteryless Receivers
37-1 T.V.-Dr. Ernest Alexanderson, Part 1
37-2 T.V.-Dr. Ernest Alexanderson, Part 2
37-3 Evolution of the Auto Radio, Part 1
37-4 Reginald A. Fessenden and the Development of Radiotelephony
38-2 DeForest Gang Hits Colorado-Part1/Nathan Stubblefield-Forgotten Pioneer of Wireless-Part1
38-3 Early TV Gear/Mahlon Loomis/KWR-37
38-4 Rider VTVM/ Fr. Joseph Murgas/30s Antennas

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THE MUSEUM

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Free Admission

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Hours: May 1-Oct. 31 Sunday 2-5 p.m.
June 1-Aug. 31 Saturday 2-4 p.m.
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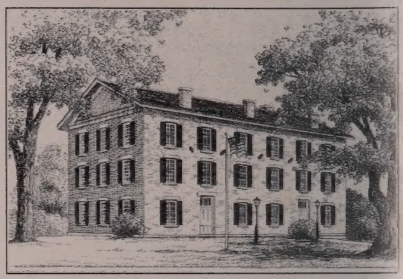
Museum Telephone: (716) 657-6260

Amateur Station: W2AN, W2ICE

Curator: Ed Gable



Mailing Address:
Ed Gable, Curator, AWA Museum,
187 Lighthouse Rd., Hilton, NY 14468
e-mail: k2mp@eznet.net

MUSEUM NEWS

Hello, everyone, from the museum Staff. Spring saw the opening of your museum on June 6th, which was also the date of the wonderfully successful Spring AWA meet. We are enjoying good museum attendance again this year spurred by increased advertising and a professionally prepared press release. Harvey Cohen, K2EJP, is our new Public Relations guy and George Platteter, AA2FO, did the photography for the press release. George is also preparing a new museum brochure to replace the monochrome, 10-year-old version we have now.

Donations also continue to come in at an increasing rate. This keeps your Registrar, Jack Wenrich, K2RY, really busy. Not so busy that we caused his recent illness, I hope; Jack needs to be out for some heart surgery. Let's all wish him a speedy recovery.

Work on the all-important permanent New York State museum Charter continues. Two hurdles remain: a separate museum finance report and a modified set of By-Laws depicting more accurately the relationship and workings of the AWA, Inc. and the AWA Electronic Communication Museum, Inc. The first is complete and the second is forming well, but it all takes a ton of (volunteered) time.

Summer is a good time to get those needed building chores done around the house and your museum is no different. There are lawns to mow, shrubs to trim and trim to paint. Your Treasurer, Stan Avery, WM3D, is a mean man behind the lawn mower and even wilder with a chain saw. I've never seen bushes trimmed that way before!!

At the museum proper, the long awaited roof restoration work has been completed with minimal impact on our displays. All of the original 1837 roof timbers had to be replaced or "sistered" with new lumber to put strength back into the structure. Prior to that, snow storms were less of a joy to behold for their beauty and more of a concern as to whether the roof would hold the load.

We spoke before about initiating some studies to determine the feasibility of con-

continued on page 72